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FINAL

**Preliminary Assessment
Report for Camp Roberts,
California**

Prepared for

**U.S. ARMY ENVIRONMENTAL CENTER
ABERDEEN PROVING GROUND, MARYLAND 21010**

Prepared by

**ENVIRONMENTAL RESOURCES MANAGEMENT, INC.
855 SPRINGDALE DRIVE
EXTON, PENNSYLVANIA 19341**

24 OCTOBER 1995

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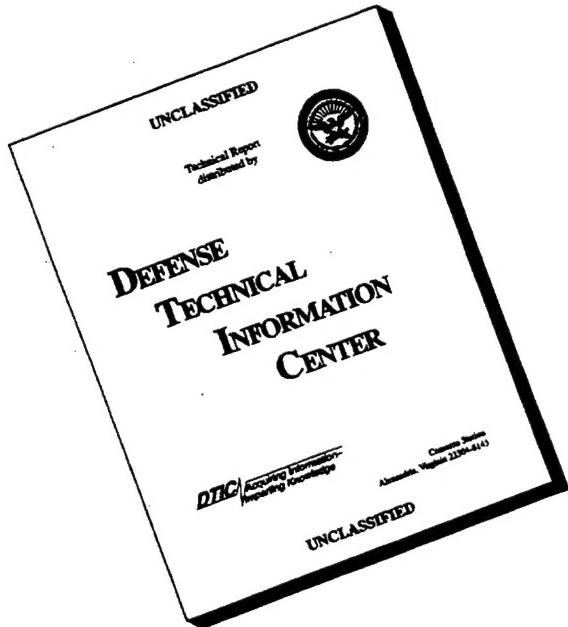
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13. ABSTRACT (Maximum 200 words) This report presents the results of a Preliminary Assessment (PA), conducted by Environmental Resources Management, Inc. (ERM), of Camp Roberts, a California Army National Guard (CA ARNG) installation. This PA was conducted to characterize the site accurately and determine the need for further action. This PA satisfies the requirements of the U.S. Army Installation Restoration Program (IRP) and the U.S. Environmental Protection Agency's (EPA) <i>Guidance for Performing Preliminary Assessments Under CERCLA</i> , dated September 1991. Camp Roberts is a 42,363 acre active CA ARNG training installation located in San Luis Obispo and Monterey counties, California, used for training military units from the western United States. This PA identified fifteen (15) environmentally significant operations (ESOs); i.e., sites identified as known or potential sources of CERCLA contaminant releases. There are numerous known and suspected petroleum releases believed to have been relatively minor and most probably covered by the CERCLA petroleum exclusion. Site investigations to identify and characterize possible CERCLA releases, and to determine the need, if any, for remedial action, should be conducted at the following areas: Engineering Yard; Ranges Y39 and M40; UDLP buried drum area and Ranges 5, 12 and 18. Immediate corrective action must be taken regarding the open storage of PCB transformers.				
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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

This report presents the results of a Preliminary Assessment (PA), conducted by Environmental Resources Management, Inc. (ERM), of Camp Roberts, a California Army National Guard (CA ARNG) installation. This PA was conducted to compile the information necessary for completion of possible preremedial activities and to provide a basis for establishing the necessary corrective actions in response to potential hazardous substance releases. The principal objective of the PA is to characterize the site accurately and determine the need for further action by examining site activities, quantities of hazardous substances present, and potential pathways by which contamination could affect public health and the environment. This PA satisfies the requirements of the U.S. Army Installation Restoration Program (IRP) and the U.S. Environmental Protection Agency's (EPA) *Guidance for Performing Preliminary Assessments Under CERCLA*, dated September 1991.

Camp Roberts is a 42,363-acre active CA ARNG training installation located in San Luis Obispo and Monterey counties, California. The installation reached its peak activity during World War II (WWII) and the Korean War when it was used as a staging/training area for overseas deployment. In 1971, the installation was transferred from the active Army to the CA ARNG. Camp Roberts is used for training military units from the western United States, primarily units from the National Guard and reserve components of the United States Sixth Army.

Camp Roberts is comprised of two cantonment areas (one each at the Main and East Garrisons) which occupy 7.4 percent of the land area and multiple ranges, training areas and impact areas. The only significant industrial operations are those normally associated with the maintenance of military track and wheeled vehicles at motor pools and maintenance shops in the cantonment areas.

This PA identified fourteen (14) environmentally significant operations (ESOs); i.e., sites identified as known or potential sources of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) contaminant releases (see Section 3.1). The PA also addressed sites previously referenced as suspected sources of CERCLA releases but for which the PA determined there was insufficient evidence available to classify them as potential CERCLA release sites (see Section 3.2).

There are numerous known and suspected releases of petroleum, oil and lubricant (POL) products across the ranges and training areas and in the vicinity of maintenance facilities. These releases:

- date from WWII through the 1970s when environmental compliance requirements brought them to an end;

- are believed to have been relatively minor and sporadic (no concentrated disposal practices were uncovered); and
- are in most instances, most probably covered by the CERCLA petroleum exclusion.

Based on available evidence, the areas of most environmental significance are being adequately addressed: 1) Tank Site 936 -- where leakage from two 25K gallon gasoline underground storage tanks (USTs) is currently being remediated; and 2) Sanitary Landfill -- where extensive sampling and analysis is ongoing but has yet to detect an adverse impact on groundwater quality.

Of the remaining ESOs, the most significant, in order of importance are:

- The open storage of deteriorated transformers labelled as containing Polychlorinated Biphenyls (PCBs) in the Engineering Yard. This deficiency, stressed in a 1983 PA, represents a serious ongoing compliance violation and poses the significant potential for a CERCLA release.
- The open burning/open demolition (OB/OD) areas, particularly Range Y39, used extensively until 1993.
- The buried drums in the United Defense Limited Partnership (UDLP) area of operations; the site has yet to be fully characterized or investigated.

Site inspections to identify and characterize possible CERCLA releases, and to determine the need, if any, for remedial action, should be conducted at the following areas: 1) Engineering Yard; 2) Ranges Y39 and M40; and 3) UDLP buried drum area. Immediate corrective action must be taken regarding the open storage of PCB transformers in the Engineering Yard.

A complete set of findings and recommendations is found in Section 8. On balance, environmental contamination from Camp Roberts appears to pose a relatively minor threat to human health and the surrounding environment. Further, all supervisors interviewed during the site visit, particularly those responsible for environmentally sensitive activities, such as maintenance and range operations, appeared keenly aware of environmental compliance requirements and of the adverse impact their operations could otherwise have on the environment.

SECTION 1

1.0

INTRODUCTION

This section provides background information regarding the purpose of this preliminary site assessment and the methods used to conduct the assessment.

1.1

BACKGROUND

In accordance with Section 120 of the CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA), all facilities on the Federal Agency Hazardous Waste Compliance Docket (Docket) are required to perform a PA [ref. P.L. No. 99-499, 17 October 1986, § 120 (c) and (d)]. The general purpose of the PA is to characterize the potential impact a facility may have on the quality of human health and the environment and to determine the need for more detailed investigation or remediation. The PA is the first step in the sequential investigative and remedial process prescribed in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), the implementing regulations for the CERCLA/SARA statutes (40 CFR Part 300). The PA should provide sufficient information to complete the U.S. Environmental Protection Agency (EPA) Hazardous Ranking System (HRS) prescore (or PA score) for a site. The HRS scores become the basis for possible inclusion of a site on the National Priorities List (NPL) for hazardous waste site response (40 CFR 300.425).

Camp Roberts is a CA ARNG facility listed on the Docket as "Camp Roberts-National Guard Unit", Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Number CA 6211820760. The installation was initially identified for CERCLIS listing by the Federal Facilities Coordinator (Ref. 34). This PA was performed pursuant to the previously referenced requirement that a PA be performed for all facilities on the Docket.

Investigations are currently underway at two sites within Camp Roberts, Tank Site 936 and the Sanitary Landfill, that were identified in previous studies as areas of known or potential hazardous substance or waste releases.

Remediation of Tank Site 936 is ongoing. The Sanitary Landfill is currently under a site inspection.

1.2

OBJECTIVES

As stated above, the general objective of this PA is to ensure that the Camp Roberts is in compliance with the PA requirements of CERCLA. The specific objectives of the assessment are as follows:

- identify and qualitatively characterize all sites where the potential for release of CERCLA hazardous substances to the environment exists;
- identify and characterize all exposure and migration pathways and receptors associated with potential release sites;
- determine the need for subsequent investigate or removal/remedial response in accordance with the NCP; and
- collect sufficient information to complete EPA's Potential Hazardous Waste Site Preliminary Assessment Form (EPA Form 2070-12).

1.3

PROCEDURES

This PA report was generated based on the following data gathering activities:

- visual inspection of the facilities and the surrounding environs;
- interviews with current and former employees familiar with the operations of the facilities;
- review of available National Guard Bureau (NGB), CA ARNG, and U.S. Army records, including records maintained by the U.S. Army Environmental Center (USAEC) [formerly the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA)] Technical Information Center (TIC), and the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM);
- review of available reports maintained by EPA Region IX, the State of California, and Monterey and San Luis Obispo county agencies;
- interviews of representative of other federal, state, and local agencies.

No samples of environmental media (e.g., soil, groundwater, surface water, or air) were collected or analyzed during the course of this PA.

The PA was conducted in accordance with EPA's *Guidance for Performing Preliminary Assessments Under CERCLA (1991)*.

A site visit of Camp Roberts was made by Mr. Larry Ward and Ms. Carol Snead of ERM on November 29 through December 2, 1994. Throughout the site visit, Mr. Ward and Ms. Snead were accompanied by Ms. Laura Loiero

(USAEC) and Major Timothy Rensema (NGB), and Mr. Brian Duke of the Camp Roberts Environmental Office.

Interviews with CA ARNG employees were coordinated by Mr. Duke. On-site personnel provided recent operational information and information on historical practices. The Camp Roberts historian, Mr. Albert Davis, was also extensively interviewed during the site visit and participated in many of the physical inspections.

1.4

REPORT ORGANIZATION

This PA Report is organized to correspond to the general topics and sequence provided in the *Preliminary Assessment Report Format* contained in the *Statement of Work Annex for NGB Projects* [Appendix B to ERM's general statement of work (SOW)].

Section 2 of the report provides site description information about Camp Roberts. Sections 3 through 7 provide more specific information regarding operational history and waste characteristics, exposure/migration pathways (groundwater, surface water, soils, and air) and receptors (human and ecological). Finally, Section 8 provides a summary of findings and recommendations for Camp Roberts.

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SECTION 2

2.0

SITE DESCRIPTION

This section provides an overview of the environmental setting and operational history of Camp Roberts. Because detailed information relevant to the history and environmental setting of Camp Roberts has been provided in previous documents (e.g., *Camp Roberts EMAP, Environmental Management Analysis Program, Phase II, Resource Management Study* Environmental Sciences Associates, Inc., 1994), the information provided in this section is an overview based on information excerpted from prior documents. The reader is directed to the referenced documents for additional detail regarding the environmental setting and history of Camp Roberts.

2.1

GENERAL PROPERTY INFORMATION

Camp Roberts is an active CA ARNG training installation located on 42,363 acres in San Luis Obispo and Monterey counties, California. The latitude and longitude are 35°47'53" and 120°44'40" at the main gate of the facility (Appendix H). Camp Roberts lies along the eastern foothills of the Santa Lucia Mountains, within the valley of the Salinas River, which flows northwestward through the property. Primary access to the facility is unrestricted and made from exit ramps off of State Highway 101, which traverses Camp Roberts parallel to the Salinas River.

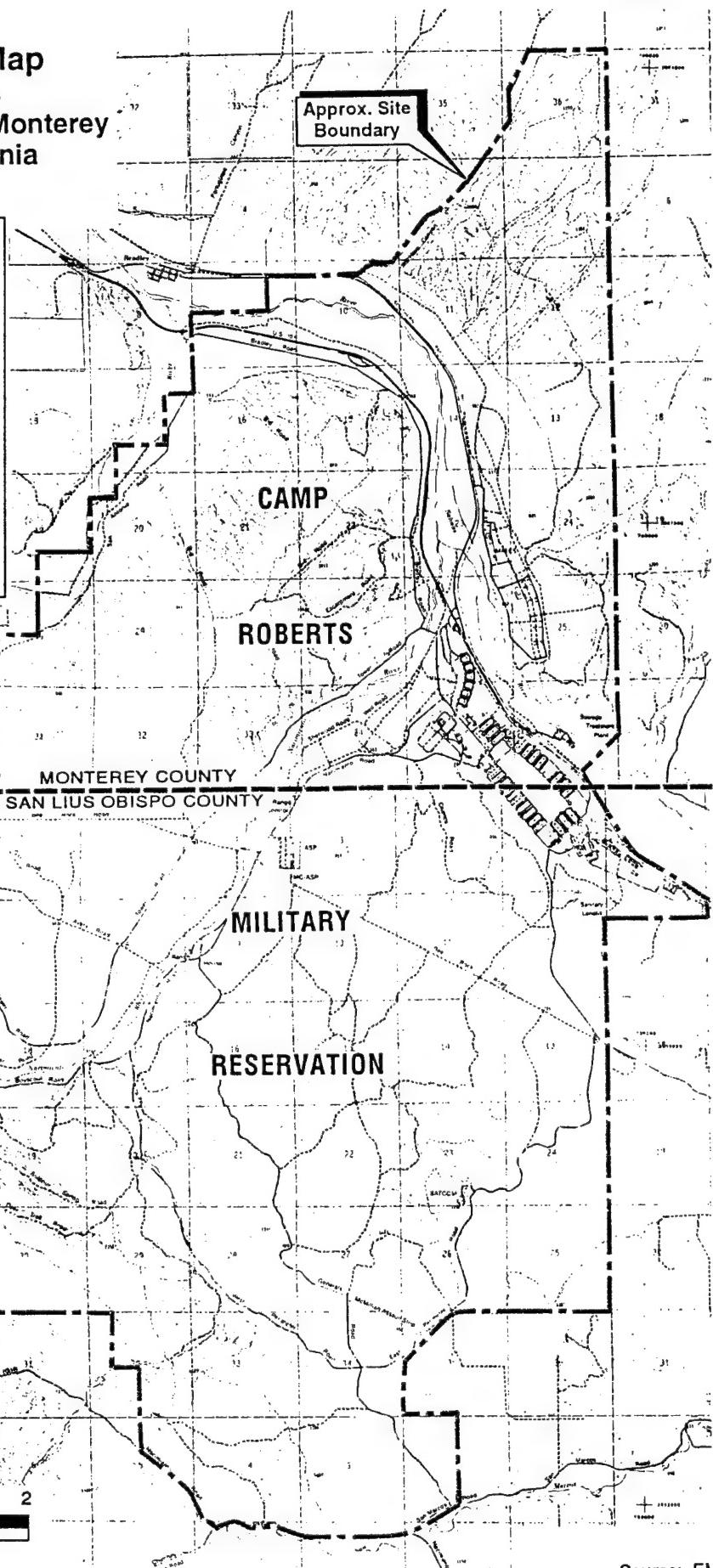
Facilities at Camp Roberts are concentrated in two cantonment areas, the Main Garrison and East Garrison, which occupy only 7.4 percent of the total land area within the installation boundaries (Ref. 1). The remaining land is used for training areas (71.5 percent) and impact areas (21.1 percent) (Ref. 1). Figures 1 and 2 show the location and general site characteristics of Camp Roberts.

2.2

SITE SETTING

Camp Roberts is located in a rural area of Central California, approximately 25 miles inland from the Pacific Coast. It is surrounded primarily by agricultural and low-density residential lands (see Figure 2). Two areas of state-owned, open space land comprising the Big Sandy Wildlife Management Area also border on the installation. Most agricultural lands surrounding Camp Roberts are used for livestock grazing, dry land farming (barley, oats, wheat, and safflower), and some irrigated farming (orchards and vineyards). The closest population centers are San Miguel (population 1,237), Bradley (population 164), and the community of Heritage Ranch that consists of seasonal and year-round residences (estimated year-round population 900) (Ref. 2). Paso Robles (population 21,865) is the largest population center in

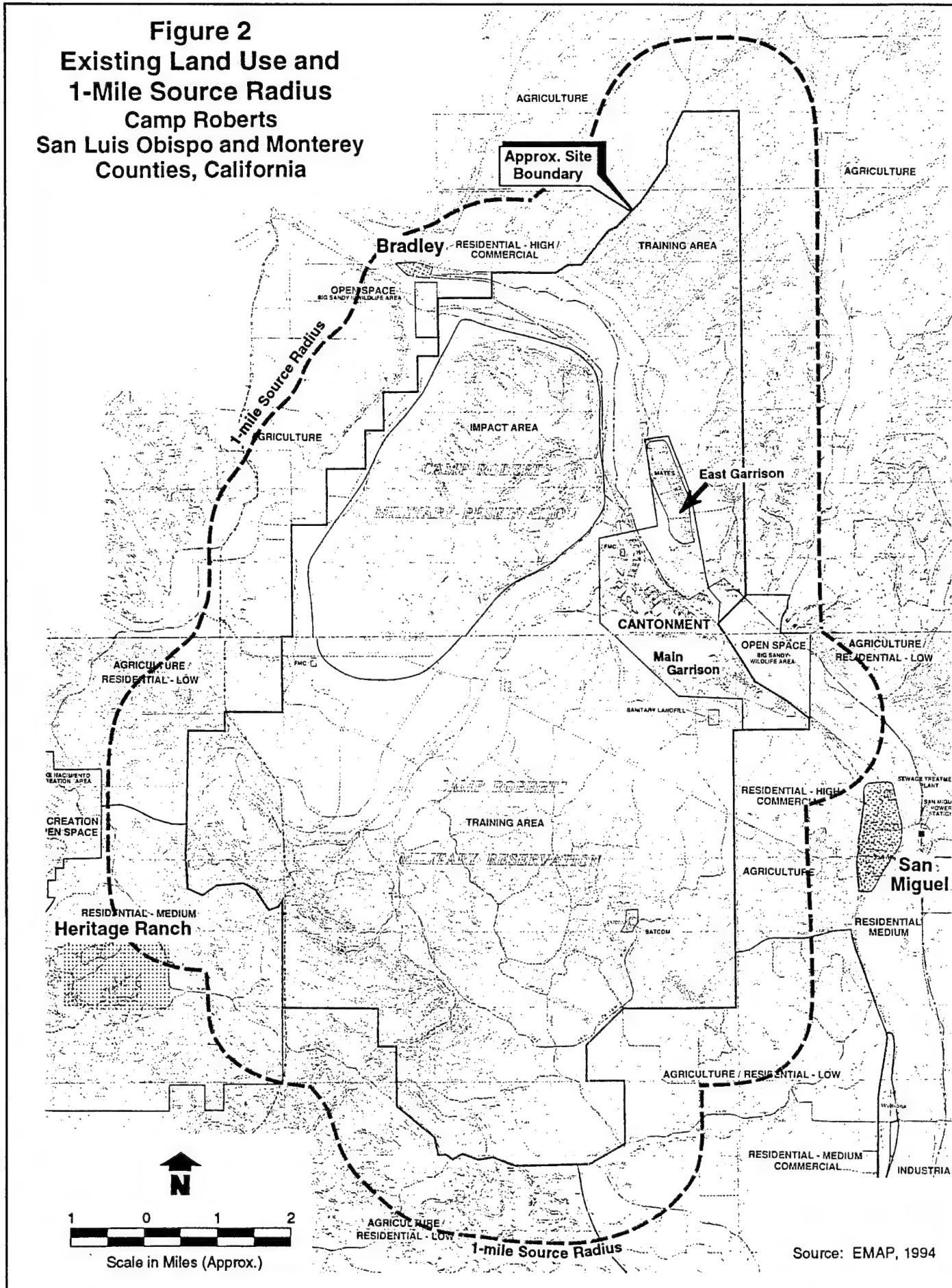
Figure 1
Site Location Map
Camp Roberts
**San Luis Obispo and Monterey
Counties, California**



Scale in Miles (Approx.)

Source: EMAP, 1994

Figure 2
Existing Land Use and
1-Mile Source Radius
Camp Roberts
San Luis Obispo and Monterey
Counties, California



the vicinity of Camp Roberts and is located approximately 12 miles south of the installation's main gate.

The climate at Camp Roberts is influenced by its proximity to the Pacific Ocean and moderated by the Santa Lucia Mountains. Summers are generally hot and dry, and winters are mild and rainy. Rainfall at Camp Roberts averages 14 inches per year, with most of the rainfall occurring between December and March. Mean summer daytime temperatures range from 87 to 94 degrees Fahrenheit (°F) and the average winter daytime temperature is 57 °F (Ref. 1).

2.3

DESCRIPTION OF FACILITIES

The facilities at Camp Roberts can be grouped into three areas: 1) the Main Garrison 2) the East Garrison, and 3) training and impact areas. Detailed descriptions of past and current activities at these facilities are provided in subsections to Section 2.3 and in Sections 3.1 and 3.2.

2.3.1

Main Garrison

The Main Garrison cantonment area includes administrative offices and headquarters buildings, housing, community facilities, warehouses, training and classroom buildings, medical facilities, the Organizational Maintenance Shop 21 (OMS-21), the sewage treatment plant, an engineering yard, and other facility support structures. The installation's sanitary landfill is located less than 2,000 feet south of the cantonment area (see Figure 3). United Defense Limited Partnership - Ground Systems Division (UDLP) is a tenant of Camp Roberts (Bldgs. 7025 and 7026) that conducts armored vehicle testing at the north end of the cantonment area and at the firing ranges. A U.S. Army Satellite Communications (SATCOM) Station is located in the southeast sector of the installation.

2.3.2

East Garrison

Facilities at the East Garrison are associated primarily with the Mobilization and Training Equipment Site (MATES). The MATES includes a paint shop, old and new battery shops, and vehicle maintenance facilities. There are also two general purpose warehouses located in the MATES area (Bldgs. 25012 and 25013).

2.3.3

Training and Impact Areas

Camp Roberts is divided into 23 training and impact areas (see Figure 4) ranging in size from 308 to 9,154 acres for a total of more than 40,000 acres (Ref. 1). The training areas are comprised of troop and vehicle maneuver

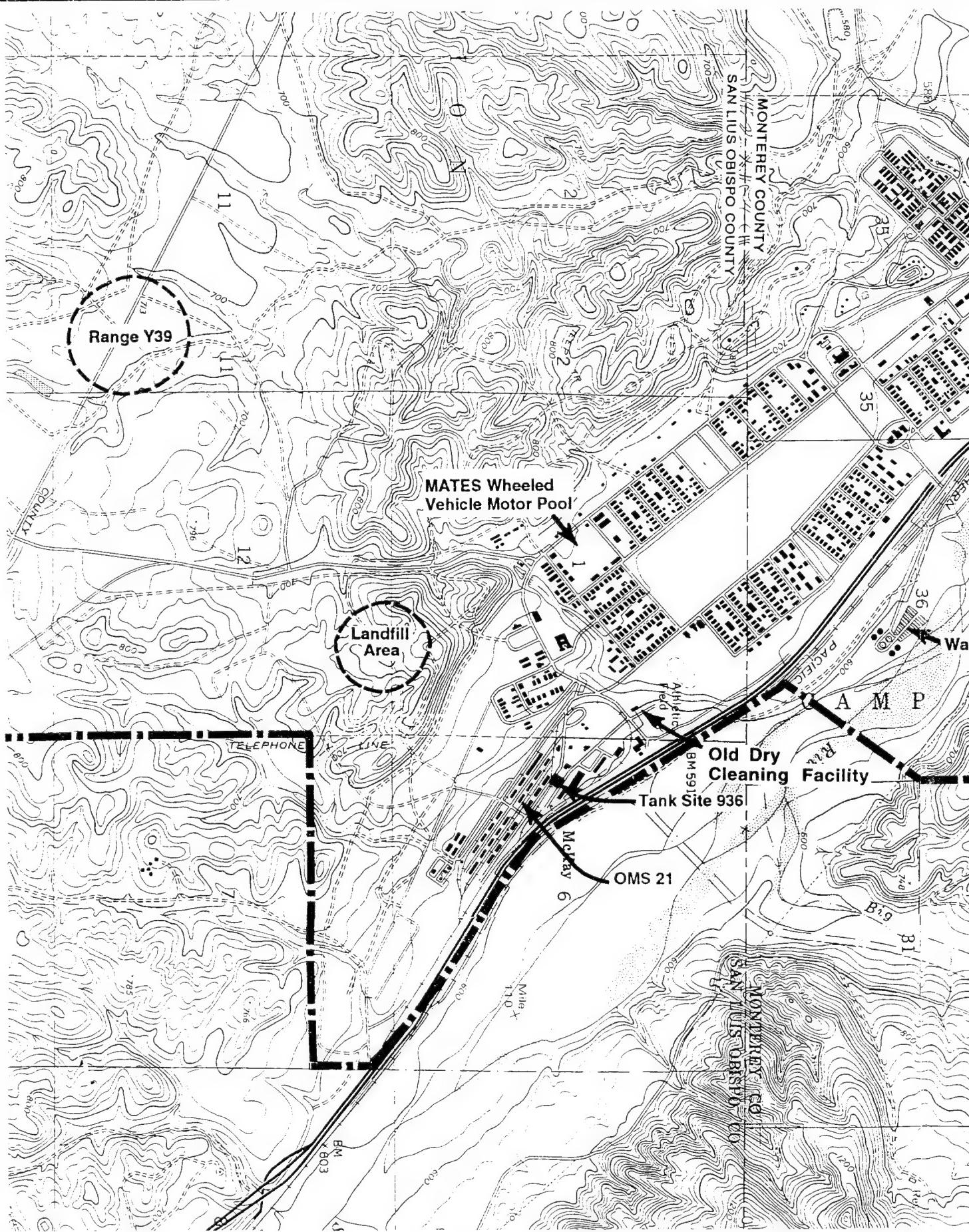
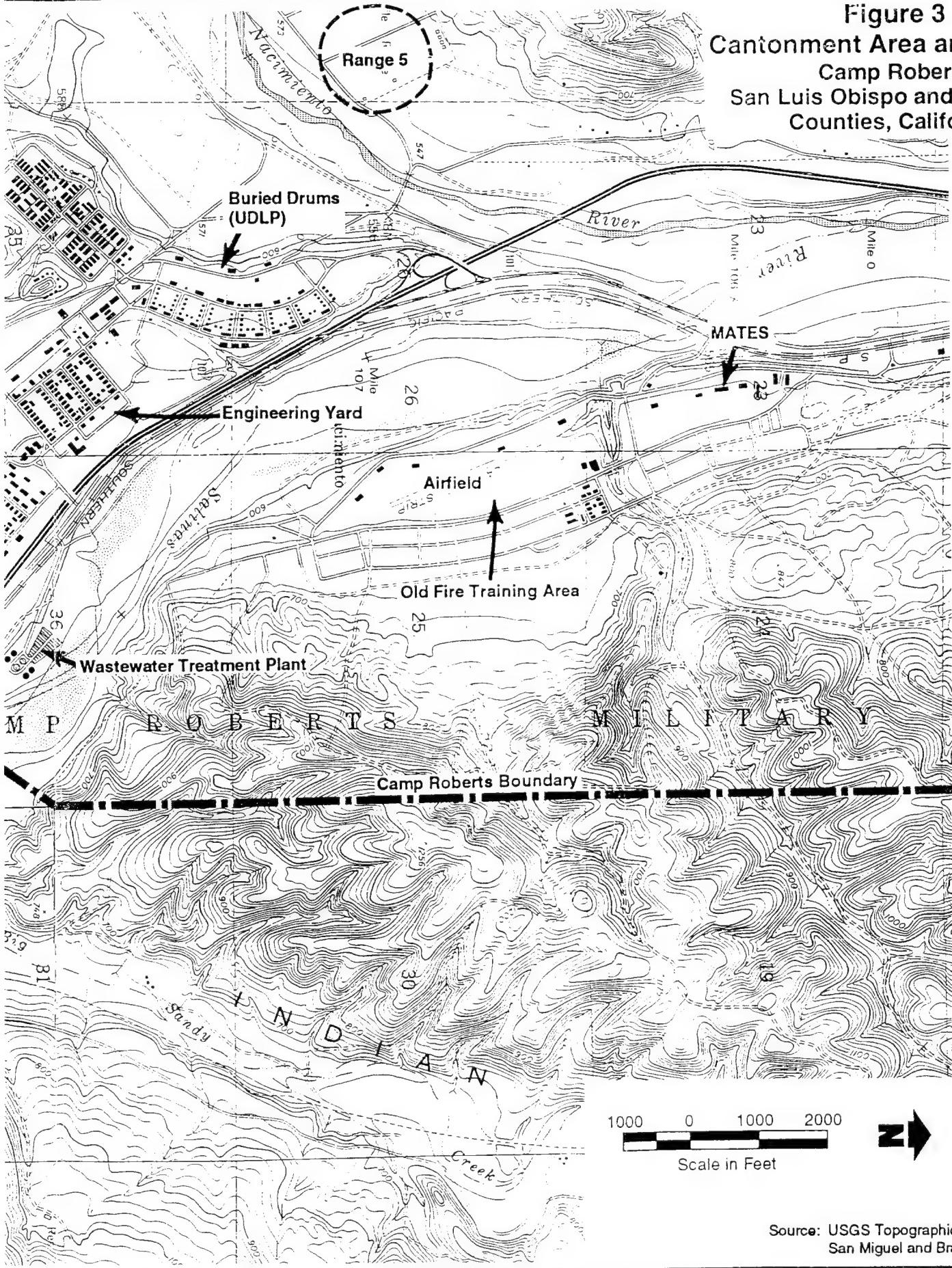


Figure 3
Cantonment Area and Vicinity
Camp Roberts
San Luis Obispo and Monterey
Counties, California



Source: USGS Topographic Quadrangles,
San Miguel and Bradley, California.

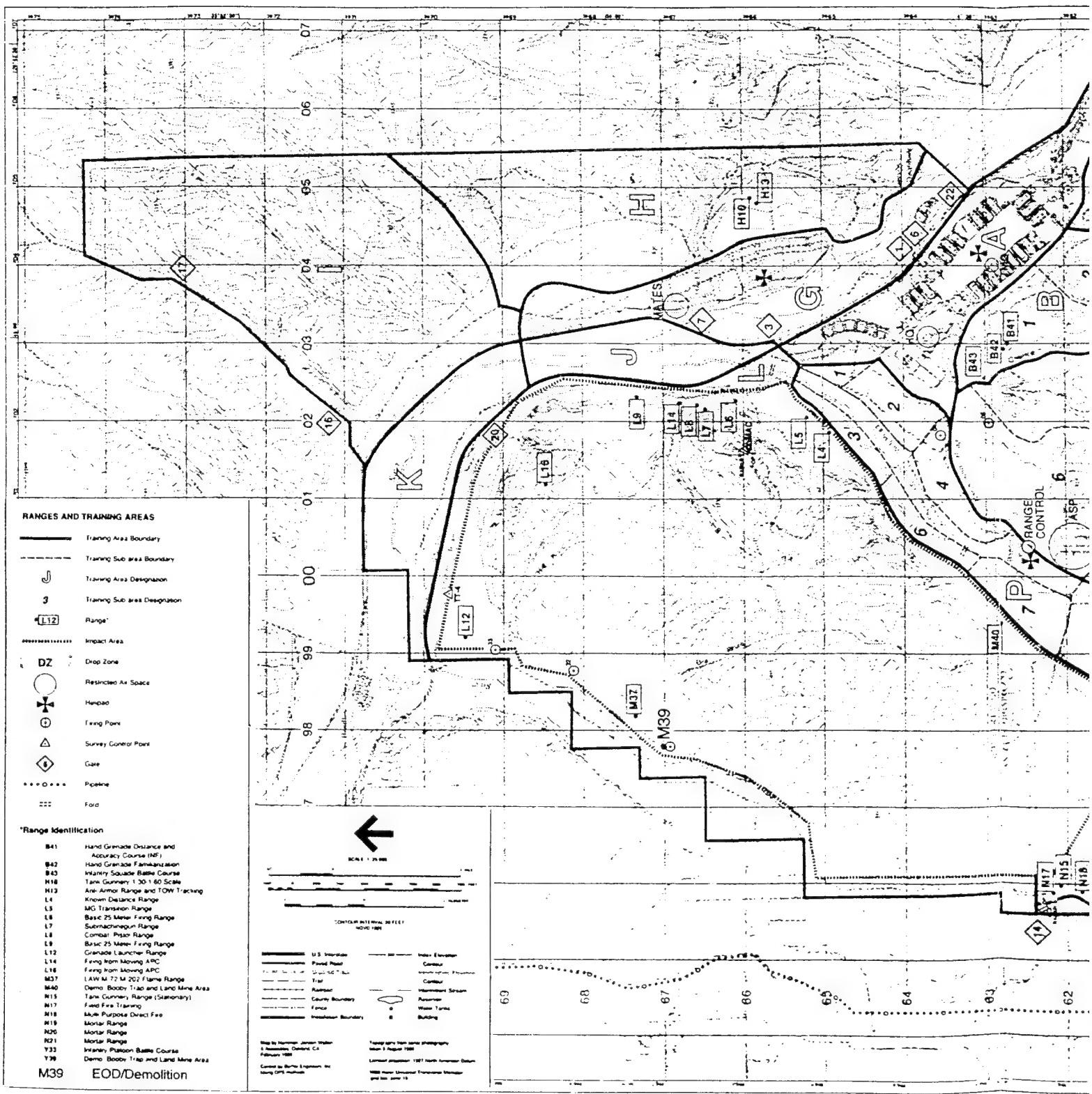
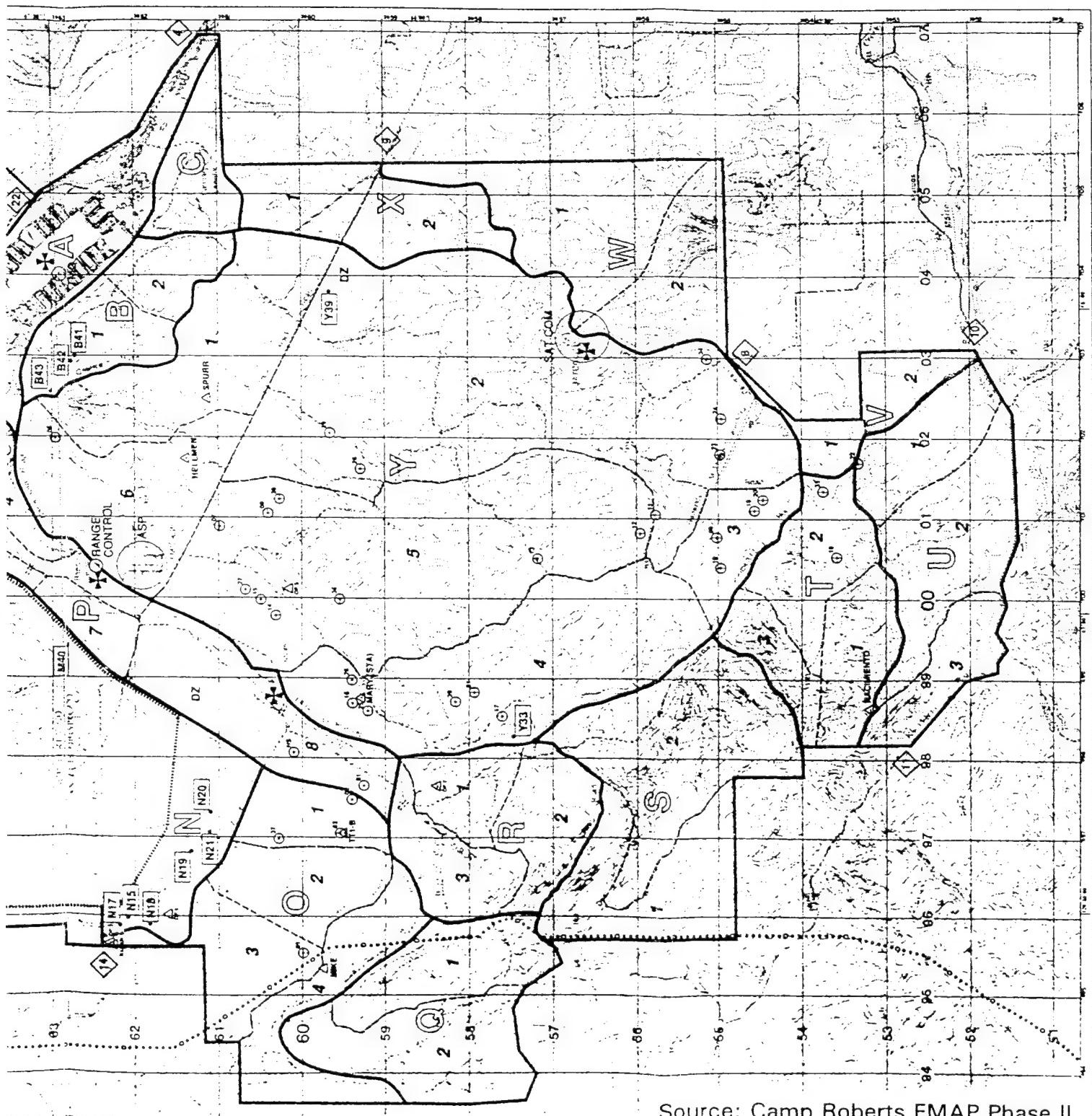


Figure 4
Ranges and Training Areas
Camp Roberts
San Luis Obispo and Monterey
Counties, California



Source: Camp Roberts EMAP Phase II

areas and firing ranges. The designated firing ranges and training areas at Camp Roberts are described in the *Camp Roberts Master Plan* (1987) and *Camp Roberts EMAP Phase II, Resource Management Study* (1994). The designated use of these ranges and training areas changes periodically to meet mission requirements.

Training activities at Camp Roberts are conducted as either live fire exercises or field training exercises. Live fire exercises involve use of the ranges and/or established firing points into the impact area (see Figure 2). Field exercises take place throughout the installation and include bivouacing, troop and vehicle maneuvers, fortification construction, and aerial operations.

2.4

PROPERTY HISTORY

Prior to its development as a military installation, the Camp Roberts area was part of the Nacimiento Ranch, which was owned by George Flint who acquired the ranch through an immense land grant in the late 1800s. The Nacimiento Ranch area was first considered for military use at the turn of the century in response to Congressional authorization for newer and more permanent posts in the western United States. Opposition from some local citizens delayed any decision until such a post was no longer considered vital. Three decades later, the need for training bases to accommodate the large number of draftees during WWII caused the Army to reevaluate the Nacimiento site.

Ownership of the Nacimiento Ranch passed through a few private owners prior to purchase by the U.S. Army in 1943, although construction on the site began on 14 November 1940. Camp Roberts initially opened as the Nacimiento Replacement Center on 2 December 1940. The name of the installation was changed to Camp Roberts on 10 January 1941. By 15 June 1941, the installation was ready to receive a full complement of troops. The Main Garrison was built to accommodate 23,000 officers and soldiers. The East Garrison, located on the heights above the Salinas River, could accommodate 6,000 officers and soldiers. The main administrative offices were sited on what came to be called Headquarters Hill located near the north end of the Main Garrison. The peak number of troops stationed at Camp Roberts was reached in mid-1944 when more than 43,000 individuals were stationed at the installation.

Camp Roberts was one of the few wartime camps to be retained after WWII. Its large size, terrain, and climate offered the possibility of year-round training of various types of troops in differing situations. However, in July 1946 Camp Roberts was deactivated as a training site and demoted to caretaker status, with very limited seasonal use for training by National Guard and Army Reserve units. In August 1950, the training site was reactivated under the command of the 7th Armored Division to train California's 40th Infantry

Division (Mechanized) and artillery units during the Korean War. Camp Roberts was also designated as an Armored Replacement Training Center, serving as a training center for active components as well as National Guard and Army Reserve units.

When the Korean Conflict ended in 1953, Camp Roberts was once again inactivated as a training site. The installation was given a "reserve" status with enough permanent personnel assigned to maintain the post and its equipment. Camp Roberts continued over the next 15 years to provide training lands for Army Reserve and National Guard units, including the 40th Infantry Division.

In 1953, post command was transferred to the jurisdiction of the Commanding General at Fort Ord. The Army's Combat Development Command used the facilities for testing and the Navy used ranges to train gunners. A Satellite Communications (SATCOM) Station was also established at Camp Roberts, linking the installation to the Army's world-wide communications system. The command structure of the SATCOM system was separate from the regular post command and it continues to operate as such.

The increasing need for training lands for National Guard and Army Reserve units from the western United States prompted an agreement between the Army and the CA ARNG in April 1971, in which Camp Roberts would be managed by the National Guard under the continued ownership of the federal government. Currently, Camp Roberts is organized under the Adjutant General of the California National Guard and is used for training units from all over the western United States.

The mission of Camp Roberts is to provide training, administrative, and logistical site support to U.S. forces, primarily units from the National Guard and reserve components of the United States Sixth Army area. Camp Roberts serves National Guard units as well as active and reserve components of other services (Army, Navy, Air Force and Marine) and active Army units of the Seventh Infantry Division (Light). Camp Roberts maintains year-round readiness for the immediate mobilization of the facility. Under mobilization, Camp Roberts would expand to receive and train approximately 18,000 personnel of the 40th Infantry Division (Mechanized) and 3,000 personnel from miscellaneous units in preparation for overseas movement and deployment. Fulfilling its training support mission involves provision of housing and community facilities, food services, supplies, training facilities, administrative and logistical services, equipment, ammunition, petroleum products, and maintenance facilities.

PERMITTING STATUS

Camp Roberts holds permits for the sanitary landfill, active underground storage tanks (USTs), discharges to air from a vehicle painting facility at the MATES, and discharge to groundwater. These permits are described as follows:

- The sanitary landfill is a permitted Class III solid waste disposal site with the State of California. The permit was issued in 1977 by San Luis Obispo County Health Division, Permit No. 40-AA-002. Reported permit violations include litter and dust control.
- There are nine active USTs at Camp Roberts. Five 20,000 gallon tanks, three diesel and two unleaded gasoline, were installed in August 1989 at the Main Garrison fuel facility (Bldg. 3090) and operate under one permit, granted in August 1989 by the San Luis Obispo County Environmental Health Department and Air Pollution Control District (APCD). Three USTs, one 5,000 gallon diesel, one 5,000 gallon unleaded gasoline, and one 10,000 gallon diesel, were installed in August 1989 at the MATES and operate under permit no. 4712, granted in August 1989 by the Monterey County Environmental Health Department and APCD. The remaining UST is a 7,500 gallon fuel oil tank at the main MATES facility (Bldg. 25021) heating plant. It is permitted under Monterey County Environmental Health Department and APCD Permit No. P-1645, issued in 1980. Due to recent regulatory action taken by Monterey County, the fuel oil tank is scheduled for removal by 1 October 1995. The heating plant will be converted to propane.
- The MATES facility painting bay is permitted by the Monterey Bay Unified APCD, Permit No. P-1599 (dated May 19, 1981).
- The wastewater treatment plant operates under Waste Discharge Order No. 88-37, issued in 1988 by the California Central Coast Regional Water Quality Control Board (RWQCB) Monitoring and Reporting Program. The groundwater discharge permit pertains to the evaporation/ percolation ponds at the wastewater treatment plant: there is no discharge to surface water at the wastewater treatment plant and it is therefore classified as a "zero discharge" facility under the National Pollutant Discharge Elimination System (NPDES), and is not required to have an NPDES permit.

Camp Roberts is characterized as a small quantity generator of non-acutely hazardous wastes [i.e., more than 100 kilograms per month (kg/mo) but less

than 1,000 kg/mo] under RCRA. The EPA has two identification numbers for Camp Roberts: CA7572890518 for "Camp Roberts Training Site" and CAD981369275 for "USNG CA Camp Roberts Training Site".

A search of standard environmental record sources was conducted by VISTA Environmental Information, Inc., 25 January 1995 (Ref. 9) pursuant to ASTM Practice E 1527. The one-mile search radius is identified on Figure 2. Because of the size and shape of Camp Roberts, VISTA could not conduct radius searches of the relevant databases at a reasonable expense and was asked instead to conduct a database search for the zip codes in which Camp Roberts and the surrounding area are located. Address information obtained in the zip code search was used to approximate the locations of the sites within one mile of Camp Roberts.

Analysis of the search results found no NPL or State Priority List (SPL) sites, or RCRA treatment, storage and disposal (TSD) facilities, within one mile of Camp Roberts. Two tenant facilities at Camp Roberts, Pacific Bell and "USNG CA FMC Corp Camp Roberts" (currently UDLP), were identified in the VISTA report as RCRA sites. Pacific Bell is a transporter/large quantity generator (EPA ID CAT080024060) and UDLP is a small quantity generator (EPA ID CA7210090240). Camp Roberts is not on the Emergency Response Notification System (ERNS) database. There are no CERCLIS sites, spill sites, or leaking USTs (LUSTs) within one half mile of Camp Roberts. There are no USTs on properties adjoining Camp Roberts. The UST database identified a total of ten active USTs on Camp Roberts that are used for storing unleaded gasoline and diesel fuel. According to Mr. Duke (Ref. 29), two of the tanks in the VISTA report (10,000-gallon unleaded gasoline tanks at Bldg. 6043) were removed in 1991 (see Section 3.1.3). The VISTA report did not include the fuel oil UST at the MATES that is scheduled for removal by 1 October 1995. The Camp Roberts sanitary landfill is listed on the Solid Waste Sites database. There are no other solid waste sites listed within one half mile of Camp Roberts.

SECTION 3

OPERATIONAL HISTORY AND WASTE CHARACTERISTICS

Current and former ownership of Camp Roberts property is provided in Appendix C. Information pertaining to the operational history and waste characteristics of Camp Roberts was obtained during the site visit, document review, and interviews with installation personnel and representatives.

Various activities at Camp Roberts, including vehicle maintenance, facility and building maintenance, pest and weed control, and weapons' firing, require the use of hazardous materials and the generation of hazardous waste. Most of the hazardous materials used at Camp Roberts are those required for the maintenance and operation of motor vehicles that are stored at the MATES and OMS-21, including lubricants, solvents, antifreeze, propane, acetylene, argon, sulfuric acid, degreasers, and battery acid (Ref. 1). Other hazardous materials used at the installation include pesticides and herbicides, ammunition and explosives, chlorine, and various paints, polishes, varnishes, and thinners (Ref. 1).

Most of the hazardous wastes are generated during wheeled and tracked vehicle maintenance. These wastes include antifreeze, lead/acid batteries (whole) and battery acid, solvents, paints, and miscellaneous solids, such as brake pads. The hazardous wastes are accumulated by type in segregated containers at satellite collection points, transferred to a central collection point, and from there transported off-site for disposal.

Prior to 1992, the installation's hazardous waste was disposed of by individual contracts on a case-by-case basis as a given amount of waste was accumulated (Ref. 38). Since 1992, CA ARNG has had a statewide contract, or contracts, for hazardous waste disposal under which any amount accumulated at a given location is picked up every 80 days, in order to comply with the Federal 90-day accumulation limit (Ref. 38).

Quantities of hazardous wastes generated vary according to the training schedule, as well as unscheduled, infrequent maintenance or repair activities (Ref. 38). Records that fully describe all hazardous materials and wastes stored on-site, and historic waste generation and disposal practices were not readily available during this PA (Ref. 38).

KNOWN OR POTENTIAL CERCLA RELEASES

Based on the information gathered, 14 sites were identified as known or potential sources of CERCLA contaminant releases. These sites are shown in Figures 3 and 4. Their operational history and waste characteristics are described as follows.

3.1.1

Sanitary Landfill/Solid Waste Disposal Site

The Camp Roberts landfill area includes a 14.3-acre permitted solid waste disposal site, 4.4 acres of which are an active canyon fill area (Appendix F, Photograph 19) (Ref. 4). Sanitary waste generated at a rate of 700 tons per year (Ref. 5) is disposed of in the permitted active canyon fill area, which has been in operation since 1972. Permitted wastes include general domestic waste such as food stuffs, paper, plastic, wood, and cardboard (Ref. 1). An intermediate cover of 12 to 18 inches of native soil is applied on a daily basis or whenever additional waste materials are deposited at the fill (Ref. 6).

Adjacent to the active canyon fill area is a 9.9-acre permitted inactive area in which waste materials were reportedly disposed of in trench fills from 1977 to 1984 (Appendix F, Photograph 20). The trench fills were 10 to 15 feet deep and 2 to 3 feet wide, and were used for the disposal of domestic trash and construction debris generated at Camp Roberts (Ref. 6). Native soil from the trench excavations was used to provide 12-inch thick intermediate cover and 36-inch thick final cover (Ref. 6). The active and inactive permitted disposal areas are not lined and there are no leachate collection systems (Ref. 4).

There are six unpermitted, inactive trench fills (Appendix F, Photographs 21 and 22) located to the south of the permitted area. This unpermitted area was reportedly used during WWII, the Korean War and, according to aerial photographs, until 1966 (Ref. 29). The volume and nature of the wastes disposed are unknown; however, the general practice in the past was to landfill all wastes, which included ammunition boxes, pesticide containers, and expired drugs (Ref. 7). The thickness and the permeability of the cover material are unknown (Ref. 4). According to Mr. Duke (Ref. 29), the last fill and intermediate cover was applied to these trenches in 1970 when Camp Roberts was "closed" by the Army. San Luis Obispo County and the California Integrated Waste Management Board refer to these areas as "Closed, Inactive, and Abandoned sites" (Ref. 29).

Until the late 1970s, X-ray developer solutions were disposed of in the landfill. Since that time, however, the solutions have been sent to the U.S. Property and Fiscal Office, and subsequently transferred to the Defense Reutilization and Marketing Office, for silver recovery (Ref. 7).

On May 6, 1983, the sludge pumps at the Camp Roberts wastewater treatment plant were inoperable and the facility was granted permission by the California Central Coast RWQCB to pump raw sludge from the clarifier units and transport it to the solid waste disposal site for disposal (Ref. 35). The sludge was disposed by cut and fill, separate from refuse, and covered immediately. The exact location of the sludge disposal is not known.

The landfill area is the subject of an ongoing site investigation by GEOSYSTEM Consultants, Inc. (GEOSYSTEM) which is conducting vadose

zone and groundwater monitoring at both the permitted and unpermitted landfill areas. The results from the most recent monitoring activities, provided in Appendix D, indicate that waste disposal operations do not appear to have adversely affected groundwater quality beneath the landfill or closed trench fill areas (Ref. 30).

3.1.2

Wastewater Treatment Plant

The wastewater treatment plant provides secondary treatment to sanitary wastewater at Camp Roberts (Appendix F, Photograph 9). It was constructed in 1941 with a treatment capacity of 3 million gallons per day (mgd) of wastewater. The facilities were comprised of two trickling filters, two primary clarifiers, two secondary clarifiers, two sludge digesters, eight receiving ponds (i.e., sludge drying beds), and two sewage lagoons.

During periods of peak use of the installation (i.e., 1941 to 1946 and 1950 to 1953), sludge was periodically removed from the sludge drying beds for disposal. Camp Roberts staff could not account for the historic disposition of the sludge (Ref. 37).

The wastewater treatment plant operated a laboratory for water quality analysis until 1977. Operations ceased when a container of chlorine leaked and the laboratory fixtures, wiring, and equipment were destroyed by the corrosive action of the gas. The leak was contained and completely cleaned up. There was no contamination to soil, groundwater, or surface water (Ref. 8).

In 1980 and 1981, the plant's treatment capacity was reduced in order to more efficiently serve the limited population at Camp Roberts. The current operating capacity of the plant is 1 mgd of wastewater using one trickling filter, one clarifier that serves as a primary and secondary clarifier, one sludge digester, and two sludge drying beds. The plant also has a series of three evaporation/percolation ponds that have been converted from the plant's remaining original drying beds and sewage lagoons. The capacity of the plant's pond system is sufficient to accommodate all effluent.

The wastewater treatment plant's discharge to groundwater is permitted through the California Central Coast RWQCB Monitoring and Reporting Program, Permit No. 88-37 (see Section 2.5). Compliance with the permit is monitored through groundwater monitoring wells located upgradient and down gradient from the wastewater treatment plan. According to the plant supervisor, the most recent groundwater monitoring results showed no signs of contamination (Ref. 8).

The plant does not discharge any effluent to surface waters in the area and no permit under NPDES is required (see Section 2.5). After February 1969 when the Salinas River overflowed and flooded the sewage lagoons, the ponds were relocated upgradient and farther away from the river (Ref. 7). Infiltration of

surface water into the sewer lines is a problem during heavy rains, and slugs of oil and grease are observed in the influent during large troop concentrations (Ref. 7). During recent flooding of the Salinas River (March 1995), the sewer line from the MATES to the wastewater treatment plant was washed away: temporary corrective measures are being employed until this line can be repaired.

Previous waste disposal practices at Camp Roberts, such as neutralizing used battery acid and discharging it to the sanitary sewer, may have resulted in the transport of heavy metals to the sludge drying beds. There is no historic record of sampling of materials in the sludge drying beds. Results of recent sampling indicate no heavy metals or purgeable organic compounds in plant effluent (Appendix K).

3.1.3

Underground Storage Tanks (USTs)

There are nine active USTs at Camp Roberts: five in the Main Garrison; and four at the MATES facility. All active USTs are permitted (see Section 2.5). One tank, a 7,500 gallon fuel oil tank at the MATES is scheduled for removal by 1 October 1995 (Ref. 29).

From 1989 to 1991, a complete survey of inactive USTs at Camp Roberts was conducted to identify tanks for removal. Tank closure was conducted in accordance with the requirements of the controlling regulatory authorities, the Environmental Health Departments in San Luis Obispo and Monterey counties. Closure reports were not available at the installation or from the regulatory agencies. However, closure requirements for all UST removals include soil sampling at both ends of the tank to detect possible tank leakage and compliance with these requirements may be presumed. Furthermore, according to Mr. Earl Madison, the Director of Facilities Engineering at Camp Roberts during the period of the tank closures, visual inspection and sampling was conducted for all closures (Ref. 28). Contaminated soils were found at Tank Sites 854, 873, 932, and 3021; however, the extent of the contamination was restricted to the soils immediately surrounding the tank which was removed and disposed of off-site.

More extensive contamination was found at Tank Site 936 where gasoline was released from two 25,000-gallon USTs that were removed in 1989 (Appendix F, Photograph 10). GEOSYSTEM conducted subsurface investigations and, in 1993, installed an integrated vapor extraction/air sparge system at Tank Site 936 to remove gasoline from the soil and groundwater. As of October 1994, the mass of gasoline removed by the integrated soil/groundwater remediation system was 25,200 pounds (Ref. 10). The remediation action by GEOSYSTEM is ongoing. Recent sampling results are found in Appendix E.

3.1.4

Engineering Yard

The Engineering Yard is in the 6400 area of the Main Garrison, enclosed by a fence, and includes three areas of concern.

- (1) Pesticide Mixing Facilities. Pesticides were historically mixed at several buildings (e.g., see Appendix F, Photograph 17) and outdoor areas in the Engineering Yard (see Section 3.1.5). There are, however, no visible signs of contamination.
- (2) Metal Salvage Yard. The primary concern is the old hot water tanks (see Appendix F, Photograph 18) covered with presumed asbestos containing materials, much of which is visibly friable.
- (3) Electrical Transformers (see Appendix F, Photographs 15 and 16). Transformers, which are potential sources of PCBs, are staged in two areas of the Engineering Yard. Some are new (of these, some are marked non-PCB; according to Mr. Duke, all are non-PCB). There are numerous old and unserviceable transformers stored in the open with no containment and no overhead cover. Many are labelled as containing PCBs. Many are unlabelled, but due to their presumed age, they may contain PCBs. Due to the deteriorated condition of many of these transformers, leaks are a distinct possibility, though no leaks were visibly apparent. The transformers pose serious compliance violations and the potential for a release of CERCLA contaminants.

The Camp Roberts Environmental Planner and Mr. Davis were asked about the potential for PCBs in hydraulic lifts on the installation. They acknowledged the possibility that the two or three hydraulic lifts could contain PCBs but believed the potential to be remote (Ref. 3 and 38). There is no report of any leak or spill from a hydraulic lift. As such, the potential for PCBs in the hydraulic lifts presents more a compliance than a CERCLA issue.

3.1.5

Pesticides

Currently, fertilizer application at Camp Roberts is performed by a contractor near the main gate on the North side. Pesticides and herbicides are stored in Bldgs. 6457A and 6457B, which are self-contained, state-of-the-art storage lockers (Ref. 12). The mixing area is a washing pad located behind Bldg. 6417. The pesticide storage units and mixing area are located in the Engineering Yard (see Figure 3).

The 1992 Pest Management Survey (Ref. 12) found that the mixing area was not in compliance with Army and Federal standards for mixing of pesticides. The pad used for mixing pesticides was not curbed to contain spills, and water from the pad drained into a sump that emptied into a leaching field. The

survey recommended that a curbed cement pad, large enough to contain 1½ times the amount of liquid held in the largest spray tank to be filled, should be provided (Ref. 12). To date, a curbed cement pad has not been provided at Bldg. 6417. However, according to Mr. Duke (Ref. 32), the operations may be moved to Bldgs. 3023 and 3024, and containment at Bldg. 6417 would no longer be necessary. Mr. Duke had no record of a significant pesticide or herbicide spill occurring at Camp Roberts (Ref. 40).

A flea and ground squirrel control program conducted in the summer of 1981 included application of carbaryl 10 percent dust (Sevin) for flea control and subsequent treatment with zinc phosphide grain bait for ground squirrel eradication. The pest control program was operated out of Bldgs. 1122, 1123, and 6415. These buildings were small wooden structures with unbermed concrete floors. Empty bags from this operation were disposed of in the landfill. Approximately 3 bags of Sevin and 10 bags of 1-percent zinc phosphide were used daily (Ref. 7).

In the past, malathion and other pesticides used by Fort Ord personnel were stored in Bldg. 6456. Bldg. 6457 was used to store excess pesticides, including DDT and lindane.

There were no signs of contamination in the vicinity of the pesticide storage and mixing areas observed during the site visit.

3.1.6

Mobilization and Training Equipment Site (MATES)

The MATES, located in the East Garrison, is a maintenance and storage facility for tracked vehicles, such as armored personnel carriers, tanks, self-propelled howitzers, and engineer equipment, as well as select wheeled vehicles. The equipment is maintained and stored on a year-round basis for use during weekends, annual training, and mobilization (Appendix F, Photograph 2).

Prior to 1957, the MATES was in the Main Garrison area, near Bldgs. 7026 and 7027. In 1957, the facilities were transferred to their current location in the East Garrison. MATES facilities include Bldgs. 25016, 25030, 25017, 25019, 25010, 25021, and 3027. Bldg. 25021, dedicated in 1980, serves as the main building for MATES.

Waste oil is the primary waste generated at the MATES. Prior to 1960, waste oil was traded for needed commodities and, during the 1960s and 1970s, it was sold to a contractor. Since the 1970s, waste oil has been transported off-site by a contractor. The MATES employs the new system of oil changes based on analytical testing rather than mileage or hours of operation. This practice has dramatically reduced the volumes of waste oil generated.

According to MATES personnel (Ref. 13), waste oil was never dumped anywhere, although it was occasionally thinned down with water and used for weed abatement. There are no records describing the use of waste oil for weed abatement, no evidence that the oil was contaminated with hazardous constituents, and no evidence of environmental degradation resulting from the practice. For purposes of this PA, it is assumed that the use of waste oil for weed abatement would fall under the petroleum exclusion under CERCLA.

[Note: In California, used oil, not otherwise contaminated with hazardous constituents, is a non-RCRA (Resource Conservation and Recovery Act) California hazardous waste. Although CERCLA hazardous substances include RCRA hazardous wastes, because California classifies used oil as "non-RCRA," the CERCLA petroleum exclusion should still apply. The exclusion, of course, would not apply if the used oil is contaminated with any hazardous constituents].

Prior to 1976, used battery acid was neutralized and poured into a drainage ditch (Appendix F, Photograph 1). The volume and frequency of this discharge was low (Ref. 13) [attempts to accurately characterize the volume of neutralized acid discharged were unsuccessful (Ref. 39)]. No visible signs of this practice were found during the site visit. From 1976 to the mid-1980s, battery acid was neutralized in a vat and then discharged into the sanitary sewer. Battery wastes were not tested for heavy metal concentration prior to neutralization and disposal to the sanitary sewer, as required by RCRA. There were no problems reported at the wastewater treatment plant associated with this operation, though, as referenced earlier (see Section 3.1.2), the sludge drying beds have not been tested for heavy metals. Currently, a contractor removes used batteries and battery acid from the site.

According to MATES supervisor, CW4 Adams, solvents were "rarely available in the old days" (1950s-1960s). He also asserted that solvents were never disposed of into the environment, but were always picked up by a contractor (Ref. 13). Solvents are currently provided by Safety Kleen, which is also responsible for their removal.

The MATES operates wash racks equipped with oil/water separators (Appendix F, Photograph 3). Floor drains are connected to the oil water separators. Waste oil collected by the oil/water separators is removed by a contractor. Abandoned wash pads are located just off the perimeter road in front of the MATES at the top of a slope leading to the Salinas River. CW4 Adams is aware of no one who could quantify or characterize the possible use of solvents in cleaning vehicles on these pads. He notes that solvents were hard to obtain and, if they were used to clean engines prior to maintenance, they were used very sparingly (Ref. 39). Any petroleum products that might have been washed away are covered by the CERCLA petroleum exclusion.

During the site visit, two buried holding tanks were observed, one on the south side of Bldg. 25017 and one on the north side of Bldg. 25019. Each tank was partially full of liquid. According to CW4 Adams, the tanks have not been in operation "for years" and he believes they contain nothing but water (Ref. 13). No odors were detected emitting from the tanks. Whether the tanks are connected to an external source of migration, such as the sanitary sewer lines, is unknown. According to CW4 Adams, the contents of the tanks are scheduled for sampling and ultimate disposal (Ref. 39).

Hazardous wastes awaiting pickup are stored in a state of the art container.

The MATES also operates a paint shop, with a permit from the Monterey Bay Unified APCD, Permit No. P-1599, dated 19 May 1981. The permit requires MATES to report the quantities of solvents and paints used.

Interviews with MATES personnel (Ref. 13, 14, 15, and 16) indicate that, with the possible exception of neutralized battery acid disposal, current and past hazardous materials use and waste disposal have resulted in no known or suspected release of contaminants to the environment.

The current MATES appears to be a well-run, state of the art, maintenance operation. Supervisors interviewed appeared knowledgeable of current compliance regulations. Spill control measures are in place, hazardous materials usage appears limited to minimum mission-essential needs and hazardous waste generation is limited and well-controlled.

3.1.7

Organization Maintenance Shop (OMS) 21

The OMS-21 is located in the south end of the Main Garrison cantonment area (see Figure 3). The OMS-21 maintains wheeled vehicles and provides emergency support to National Guard units within approximately a one-hour drive of Camp Roberts. The OMS-21 presently has a staff of 13 and performs maintenance on approximately 365 vehicles a year. Information on past and current practices at the facility was provided by MSG Palopoli, the OMS-21 shop foreman.

The OMS was located at Bldg. 6410 until 1977/78 when it moved to its current location. The facilities include wash racks (Appendix F, Photograph 11), an old locomotive repair shop, and the main maintenance building. Past and present methods for battery acid disposal at the OMS-21 are the same as those described for the MATES. Past and current practices regarding solvents and waste oil are also essentially identical to those described for the MATES (see Section 3.1.6). The OMS-21 also employs the analytical testing of engine oil to determine oil change requirements (Appendix F, Photographs 12 and 13).

The use of waste oil for dust suppression and weed control was also implemented at the OMS; however, no stained soils or stressed vegetation were observed during the site visit. As with the MATES, there is no evidence to suggest this oil was otherwise contaminated and any resultant contamination would qualify under the CERCLA petroleum exclusion.

Although OMS-21 operations are conducted in older buildings, the statements made in the final paragraph of the section on the MATES facility (see Section 3.1.6) are otherwise equally true of the OMS-21.

3.1.8 *MATES Wheeled Vehicle Motor Pool*

The MATES wheeled vehicle motor pool, located at the southern end of the Main Garrison cantonment area, is comprised of Bldgs. 3026 and 3027, and a vehicle parking area. Site history and operational practices were provided by the overall supervisor, WO Ricketts (Ref. 27).

Buildings 3026 and 3027 have been used for a variety of purposes over the years (largely unknown), including as a bakery (1986-1987). The facility has been in current operation since 1988. Prior to that time, maintenance of the wheeled vehicles was the responsibility of the organizational units.

Since its inception (1988), the facility has contracted for the removal/recycling of all waste products including waste oil, solvents, and spent batteries. Floor drains are connected to oil/waste separators. There is no known history of any spills or leaks of hazardous materials. Washracks with containment and oil/water separators are in place. Hazardous waste awaiting pickup is stored in a state of the art container.

As with the MATES and OMS-21, operations at this facility appear to be conducted with due regard to environmental compliance.

3.1.9 *Old Fire Training Areas*

The area identified as the "old fire training area" by the former (1983-1992) Fire Chief at Camp Roberts (Ref. 17) is located in the East Garrison, south of the MATES and east of the Airfield. Diesel fuel and gasoline were reportedly used during the training. Onsite personnel were unable to identify the dimensions and boundaries of this area (Ref. 17). During the site visit, the general area identified by the former Fire Chief was inspected; however, no signs of fire training activities, such as stressed vegetation, were observed during the site visit. Similar training may have been conducted in the Main Garrison near the old fire station (Bldg. 7020), but again, there was no evidence to substantiate this possibility.

3.1.10 *Old Dry Cleaning Facility*

A laundry and drycleaning facility was located in the Main Garrison cantonment area. The laundry building was demolished (date unknown). The drycleaning building (Bldg. 844) (Appendix F, Photograph 23) was built during WWII and used through the Korean War, after which it was abandoned. The USTs associated with the facility were dry when removed in 1991 which presents the possibility of leakage. However, there are no reports of contamination in the soils surrounding the pulled tanks. No records regarding the contents of the USTs were available. As discussed in Section 3.1.3, UST removal at Camp Roberts was conducted under the regulatory control of the Environmental Health Departments of San Luis Obispo and Monterey counties. Visual inspection and sampling was conducted for all UST closures (Ref. 28) and any leakage of the USTs at this facility would have been detected during removal. No signs of contaminated soils were found during the site visit (see Section 3.1.3 regarding presumed compliance with regulatory requirements).

3.1.11 *Airfield*

The Camp Roberts Army Airfield is located in the East Garrison and is comprised of a 2,760 feet by 75 feet paved runway and two 400 feet by 150 feet paved aircraft parking areas. Operational facilities consist of a flight control tower (Bldg. 27160), airfield operations building (Bldg. 27109), airfield fire and rescue station (Bldg. 27110), and ready building (Bldg. 27126), located northeast of the Airfield. All buildings are of temporary construction.

There is no evidence in the historical documents to suggest a release at the Airfield. During the site visit, neither the personal interviews nor the physical inspection of the facilities suggested the potential for past or present CERCLA releases. Usage of the Airfield is light and generally, seasonally limited.

3.1.12 *United Defense Limited Partnership (UDLP)*

The tenant operations by UDLP, formerly Ford Machinery Corporation, are related to armored vehicle testing at Bldgs. 7025 and 7026 and installation training areas. UDLP occupied Bldg. 7027 until 1992 when it burned to the ground.

Nine buried drums were discovered southwest of Bldg. 7026 during excavation for a hazardous materials/hazardous waste accumulation facility in November 1993 (Appendix F, Photograph 14). One soil sample was taken at the site and analyzed for total petroleum hydrocarbons (TPH), semi-volatile organic compounds (SVOCs), and metals. Lead was the only detected compound or metal in the sample, the concentration of which was 40 mg/kg (Ref. 19). No further action was taken to identify the extent of this drum burial area, nor to

conduct further testing or remove the drums. The site has not been properly closed.

3.1.13

Ranges/Training Areas

Based on interviews with site personnel, vehicle washing and engine oil changes historically occurred in the field. It was common practice to dump the waste oil into gopher holes; however, the waste volumes were small (approximately 8 quarts at a time) and the dumping was not centralized; rather it was spread out across the ranges and training areas. This practice was discontinued in the 1980s. No evidence of environmental degradation was observed. During current training exercises, all POL products are collected for proper disposal. Also, vehicle washdowns no longer occur in the field.

Two training areas, B and Y, which comprise 11,700 acres on the installation south of the Nacimiento River, were used as an impact range in the 1940s. Although the area has been surface swept on several occasions, unexploded ordnance (UXO) items are still found. All personnel training in this area are briefed on the UXO danger and instructed to report any found (Ref. 7).

The release of petroleum products is most likely covered by the CERCLA petroleum exclusion though there remains the distinct possibility that the releases may have included hazardous constituents (e.g., antifreeze), which would not be covered by the exclusion (see discussion of the CERCLA petroleum exclusion at Section 3.1.6). Nevertheless, the evidence indicates that releases were minor and sporadically scattered across the training areas, with no documentation as to their location.

CERCLA releases may have occurred at the firing points (propellant burns and explosives constituents) and in the range impact areas (explosives constituents, heavy metals) (Appendix F, Photographs 24 and 25). There is no record of comprehensive sampling for such releases nor is there any known evidence of CERCLA releases. The evidence suggests that even if releases from the impact areas were to reach the water table, they would not be present in hazardous concentrations (due to the widely dispersed nature of potential releases). Releases from firing points present a greater potential for an environmentally significant release because potential contamination would be more concentrated. During the site visit, representative firing points were observed. No evidence of contamination or environmental degradation was visible. Given the limited and intermittent use of these firing points (Ref. 1), the potential for CERCLA releases is minimal.

Small arms/pistol ranges are in use at Camp Roberts. Two such ranges, immediately west of the Main Garrison cantonment area were inspected during the site visit (Appendix F, Photograph 8). The clear concern at such ranges is lead contamination. The official Department of Defense position is that RCRA

does not apply to military firing ranges. Nevertheless, CERCLA is potentially applicable and lead levels could be determined to be excessive under either:

- (1) Toxicity Characteristic Leaching Procedure testing for the hazardous waste characteristic of EP toxicity [where RCRA is incorporated by CERCLA as a relevant and appropriate regulation (though not applicable)] or,
- (2) A risk-based cleanup standard.

So long as the ranges remain active, investigative or remedial actions are normally not required.

The Camp Roberts Environmental Planner provided the following information regarding current usage of Camp Roberts' ranges and firing points.

"Live-fire ranges currently in regular use are as follows:

- L4: Rifle known distance, 100 - 600 m.
- L5: Machine gun transition fire
- L6: Basic 25 m. rifle
- L7: Submachine gun
- L8: Combat pistol
- L9: Basic 25 m. rifle
- L14: Moving vehicle assault course
- L12: 40mm grenade launcher
- M37: LAW/flamethrower
- M39: EOD/demolition
- M40: Demolition
- N15: Tank gunnery (stationary table)
- N18: Multipurpose machine gun
- N19, N21: Mortar

Ranges used "conditionally" are as follows:

B41, B42: Hand grenade familiarization & practice (Use of these ranges precludes other uses of TA B for safety reasons, and is not often invoked. A new hand grenade range is planned adjacent to L4)

H10, H13: Tank gunnery 1:30/1:60 scale; and Tank gunnery Target acquisition/tracking (H10 and H13 have not been in active use for the past two (2) years).

Ranges not currently in regular use are as follows:

B43: Infantry Platoon Battle Course

L16: Previously also used as a moving vehicle assault course

N17: M60/M2 Machine gun

N20: Mortar

Y33: Infantry Platoon Battle Course

Y39: Previously used EOD/demolition range. This activity transferred to M39 in 1994.

All surveyed field artillery firing points are currently in regular use except for the following:

FP 04, FP 06, FP 07, FP 08, FP 14, FP 15, FP 27, FP 28, FP 29, FP 38."

3.1.14 EOD Areas Y39, M39 and M40

Explosive Ordnance Disposal (EOD) operations have been conducted on Camp Roberts at least since the early 1970s (and presumably since WWII). EOD operations include the disposal/thermal destruction of unserviceable munitions ranging from 25 millimeters to 8 inches, knives, residue from bombs, and confiscated drugs. UXO found on various ranges are usually disposed of in place.

Range Y39 (Appendix F, Photographs 26 and 27), located in the east-central end of the old WWII impact area was reportedly used for EOD operations from the early 1970s until 1993. Its use was discontinued for, among other reasons, its relative proximity to newly constructed private residences (off post). EOD operations were temporarily transferred to Range M40 (north-west section of current impact area) and then to Range M39 (south-east section of current impact area).

EOD areas are normally, properly classified as open burning/open demolition (OB/OD) areas permitted under RCRA. There is no evidence that any of the three ranges has been permitted. Such permits regulate not only ongoing operations but also monitoring, closure and post-closure requirements.

The historical OB/OD operations conducted at Range Y39 are also subject to regulation under CERCLA. A visual inspection of Range Y39 revealed the wide-spread presence of EOD operations. There is a distinct possibility of CERCLA releases such as heavy metals and hazardous constituents from explosives.

3.2

AREAS OF PREVIOUSLY SUSPECTED CONTAMINATION

The sites listed below are discussed because they were referenced in site interviews or previous reports as potential sources of contamination. These areas are not listed in Section 3.1 because the available evidence reviewed during this PA was deemed insufficient to classify them as potential CERCLA releases. In some cases, the "evidence" of a release was entirely speculative; in others, the evidence, at best, suggested a release of little or no consequence.

3.2.1

Old Printing Plant

There is evidence to suggest that a printing plant was operated in one of the buildings at Camp Roberts. The site visit included a physical inspection of the presumed building in question. However, it was later determined that the building inspected was not the site of the old printing plant and that there is no known record or personal knowledge of the correct building number (Ref. 31).

3.2.2

Old Photographic Laboratory

There is evidence that Bldg. 6001 housed a photographic laboratory; closed in the early 1970s. There are no available records describing operations or disposal practices.

3.2.3

Old Hospital Area

The old hospital, constructed during WWII and demolished in the 1950s, was located in the Main Garrison, in the western portion of the cantonment area. Use of the hospital was discontinued after the Korean War. During the site visit, two vent pipes and some hospital debris were observed at the site. According to the Camp Roberts Environmental Planner (Ref. 18), there were three USTs associated with the old hospital area, but none were found during the recent tank removal projects and it is assumed that they were removed at an earlier time. The Environmental Planner reiterated his position that the abandoned piping in the old hospital area is most probably old water piping

that poses little environmental concern (Ref. 38). No data were available regarding laboratory operations or disposal practices.

3.2.4

Incinerators

Based on historical maps, document reviews and information obtained during the site visit, several incinerators existed on Camp Roberts. These incinerators have been demolished (except Bldg. 927) (Appendix F, Photograph 5), and their operational details are no longer available (Ref. 7). According to the Camp Roberts Environmental Planner, Mr. Duke, and Mr. Davis, Bldg. 927, constructed as an incinerator, was never put into operation. During the site visit, suspected UXO was observed in a field southeast of Bldg. 927 (Appendix F, Photographs 6 and 7). This situation was brought to the attention of the Camp Roberts Environmental Planner. In recent correspondence, Mr. Duke advised that, to his knowledge, this area was never used as a landfill although Mr. Davis reports the area was once used as a "scrap metal depository" which might "explain the debris and the UXO" (Ref. 38). Mr. Davis also believes the UXO round observed during the site visit is "only the metal case" (Ref 38).

3.2.5

Oil Spill

On 18 August 1985, a Mobil Oil pipeline passing through Camp Roberts began leaking due to active corrosion of the pipe. Approximately 110 cubic yards of soil were contaminated with crude oil. All of the contaminated soil was removed within five days (Ref. 11). Since this site would fall under the petroleum exclusion for CERCLA, and because the contaminated soils were entirely removed, this site is not considered a potential source of contamination.

3.2.6

Heritage Ranch Wastewater Discharge

The Heritage Ranch sewage treatment plant began operation under the administration of San Luis Obispo County in 1971. In 1990, the Heritage Ranch Community Services District (CSD) became the administrator of the facility. The Heritage Ranch CSD obtained NPDES Permit No. CA0048941 from the California Regional Water Quality Control Board (RWQCB), Central Coast Region, in 1991 to continue the discharge of treated domestic sewage into an unnamed tributary to the Nacimiento River. This tributary enters the southwest boundary of Camp Roberts and flows north approximately 3 miles to its confluence with the Nacimiento River.

The National Guard at Camp Roberts filed a petition to the State Water Resources Control Board in April 1993 contending that the wastewater from the Heritage Ranch discharge constitutes a health hazard to personnel training at Camp Roberts. However, the State Board dismissed the petition, stating that the discharge limits placed on the Heritage Ranch sewage treatment

facility are sufficient to protect the health of people who may have occasional contact with the water in the unnamed tributary, and affirmed RWQCB Order No. 91-10 which required reasonable steps to assure that the occasional contact between troops at Camp Roberts and the unnamed tributary will not result in health problems (Ref. 20). On 11 March 1994, the RWQCB issued Item No. 15 stating, "Heritage Ranch has demonstrated consistent compliance with its effluent limitation" (Ref. 21).

During the site visit, odors were detected from the unnamed tributary on Camp Roberts property. However, the evidence indicated that these odors could be attributed to naturally occurring sulfur deposits.

3.2.7

Depleted Uranium (DU) - Ranges L5, L12 and N18

DU was fired on Ranges L5, L12 and N18 in 1976, 1977 (Ref. 7) and 1979 (Ref. 1) by the Pacific Technical Corporation (PATEC). Existing environmental records did not clarify the extent of residual DU contamination.

On 29 June 1995, the Nuclear Regulatory Commission (NRC) Branch Office in Walnut Creek, California, was contacted to ascertain the current status. Ranges L5 and L12 have been decontaminated and released for unrestricted use. Range L18 could not be decontaminated because of the presence of live ordnance (UXO). However, a "general license" was issued to cover the residual DU on Range L18. Because the quantity of DU is so minor, no decontamination is necessary (Appendix L). The Camp Roberts Environmental Planner was provided with a copy of the documents at Appendix L.

SECTION 4

4.0

GROUNDWATER PATHWAY AND TARGETS

4.1

GROUNDWATER PATHWAY

Camp Roberts is located in the California Coast Ranges section of the Pacific Border physiographic province, which consists of a series of nearly-parallel, northwest-trending faults, mountain ranges, and valleys. The principal physiographic features of Camp Roberts are the broad, flat stream channels and elevated stream terraces associated with the Salinas, Nacimiento and San Antonio river valleys, and the rolling hills and high plain areas between drainages. Elevations range from approximately 600 to 800 feet above mean sea level (msl) in the river valleys, and from approximately 700 to 1,600 feet above msl in the high plains. Net precipitation at Camp Roberts is approximately minus 20 inches per year.

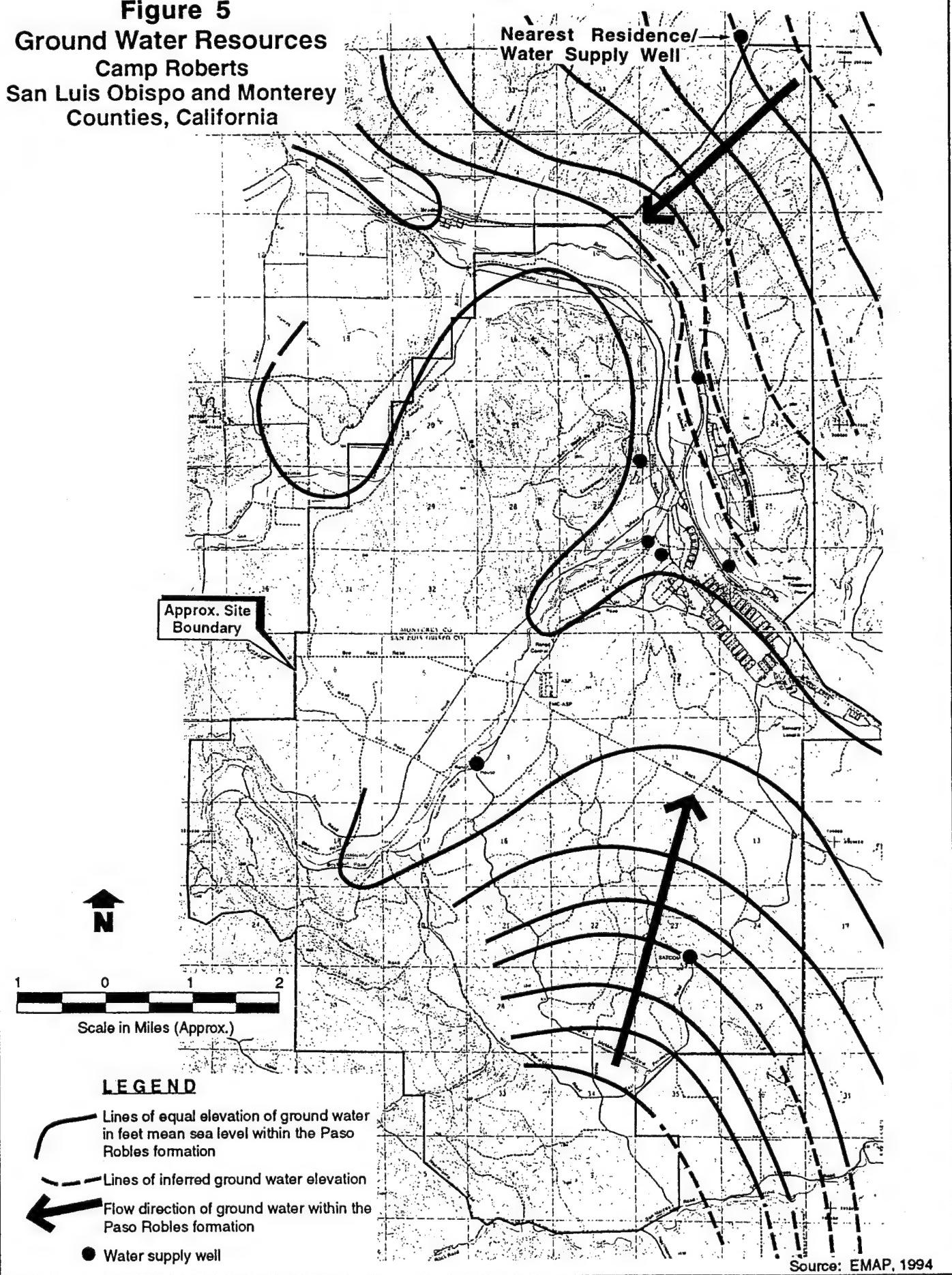
The geology of the area is characterized primarily by the non-marine sedimentary rocks of the Paso Robles Formation, which is a Pliocene to Pleistocene deposit of non-marine sediments ranging in thickness from 200 feet to more than 2,000 feet (Ref. 4 and 22). The Paso Robles Formation includes strata of conglomerate, sandstone, shale and limestone (Ref. 1), all of which are interconnected water-bearing units. There are no karst features at Camp Roberts. Quaternary alluvial deposits of semiconsolidated and unconsolidated gravel, sand, silt, and clay occur in stream valleys and on terraces.

The Paso Robles Formation is a principal source of groundwater supply at Camp Roberts and in the surrounding region. Groundwater found in the surficial alluvial deposits is generally not used for water supply because of its poor quality and susceptibility to contamination.

The Paso Robles Formation forms a groundwater basin covering an area of approximately 860 square miles (Ref. 1) with a usable storage capacity of approximately 1.7 million acre-feet (Ref. 5). The Paso Robles aquifer consists mostly of conglomerates and sandstones (Ref. 22). It is confined in some areas but unconfined in the Camp Roberts vicinity with the aquifer occurring at the surface (Ref. 1). Depths to groundwater in the Paso Robles Formation at Camp Roberts range from approximately 25 feet below the ground surface (bgs) in low-lying areas to 250 feet bgs in elevated areas.

The Paso Robles groundwater basin is drained by the Salinas River. At Camp Roberts, west of the Salinas River, groundwater flows northward toward the Nacimiento and Salinas rivers and, east of the Salinas River, groundwater flows southward toward the Salinas River (see Figure 5). Recharge of the aquifer is estimated to occur at a rate of 47,000 acre-feet per year (Ref. 5), which is roughly equivalent to the extraction rate (Ref. 1).

Figure 5
Ground Water Resources
Camp Roberts
San Luis Obispo and Monterey
Counties, California



The PA investigation did not uncover any reports of citizen complaints or well closures associated with activities at Camp Roberts. One water supply well on the Main Garrison was closed in 1980 due to naturally occurring high levels of radiation (Ref. 5). The Camp Roberts wastewater treatment plant has a permitted discharge to groundwater (see Section 2.5); there have been no reported violations of this permit.

4.2 GROUNDWATER TARGETS

Groundwater from the Paso Robles Formation is used for agricultural supply, and municipal and domestic drinking water supplies. Public supply wells at Camp Roberts and the nearby communities of San Miguel and Bradley extract water from the Paso Robles Formation. In the rural areas surrounding Camp Roberts, residences rely on private wells, which also draw water from the Paso Robles Formation, for drinking water supply. There are no federal or state designated wellhead protection areas within four miles of Camp Roberts.

There are seven active drinking water wells located on Camp Roberts (see Figure 5), four of which provide public supply water to the installation's 345 permanent employees, including 50 residents of the installation, and the temporary populations of trainees that can average as high as 1,800 (Ref. 23 and 24). Three of the public supply wells, having operating capacities of 400 to 500 gallons per minute (gpm), are interconnected and located in the Main Garrison of the cantonment area (Ref. 8). Water production is provided by rotating well use, with no single well operating more than seven hours per day (Ref. 1). The East Garrison is served by one public supply well with an operating capacity of 220 gpm (Ref. 8). This system is not connected to the drinking water system that serves the Main Garrison.

Two active wells are located in the training areas; one well is located at the Ranch House and the other well is located near Range 6. A third well is located near the SATCOM area. The capacities of these wells are 65 gpm, 50 gpm and 84 gpm, respectively.

Although all wells deliver potable water, drinking water is chlorinated as a safeguard. There are no other chemicals added and no filtration of the water occurs. Bacterial counts are conducted weekly with reports submitted monthly to the California Department of Health Services (Ref. 1). Camp Roberts is in full compliance with applicable drinking water standards, such as the Safe Drinking Water Act (Ref. 8).

San Miguel, Bradley, and Heritage Ranch are the only communities with municipal supply wells within four miles of Camp Roberts. San Miguel's population of 1,237 is supplied with drinking water from two wells; a third well is being developed. San Miguel's municipal supply wells are located approximately 1.5 miles from Camp Roberts. Bradley's population of 164

relies on groundwater production from two wells located approximately 0.5 miles from Camp Roberts. The water supply well for Heritage Ranch, providing water to approximately 900 permanent residents, is located adjacent to the Nacimiento River, approximately 1 mile from the Camp Roberts boundary. The distance from the installation boundary to the nearest water supply well is 800 feet (based on USGS topographic map showing a building complex at the north end of the property assumed to have a private well; see Figure 5).

The number of people using groundwater for drinking water supply within a four-mile radius of Camp Roberts is identified in Table 1. Water supply wells in the region range in depth from 50 to 250 feet, with an average yield of 500 gpm and a maximum yield of approximately 3,300 gpm (Ref. 5).

None of the water supply wells on or within four miles of Camp Roberts are considered primary targets of potential contamination sources at the installation. Secondary target populations served by groundwater withdrawal from within four miles of Camp Roberts include the Camp Roberts worker and resident population, the nearby communities of Bradley, San Miguel, and Heritage Ranch, and the residences in rural areas reliant on private wells (see Table 1).

Table 1 Populations Served by Groundwater Withdrawn Within Four Miles of Camp Roberts

Populations ¹ Served by:		
	Private Wells	Public Wells
0 - ¼ mile	43	345
> ¼ - ½ mile	33	98
> ½ - 1 mile	176	66
> 1 - 2 miles	1546	1527
> 2 - 3 miles	3666	630
> 3 - 4 miles	700	0
Total Within Four Miles	6164	2666

¹ Populations are based on data obtained from San Luis Obiso Council of Governments and Association of Monterey Bay Area Governments.

SECTION 5

5.0

SURFACE WATER PATHWAY AND TARGETS

5.1

SURFACE WATER PATHWAY

Camp Roberts lies entirely within the Salinas River drainage basin. The mainstream of the Salinas River flows northwestward through the site from river mile (RM) 108.5 to RM 102.3. Major tributaries to the Salinas River occurring within the installation boundaries are the Nacimiento and San Antonio rivers. The Nacimiento River flows northeastward through the center of the property to its confluence with the Salinas River at approximately RM 105.5, north of the Main Garrison. The San Antonio River flows northeastward along northwest boundary of Camp Roberts and enters the Salinas River outside of the installation boundary at approximately RM 101.3. Most of the installation is drained by intermittent tributaries to the Nacimiento River (see Figure 6).

The probable point of entry (PPE) into the surface water pathway for contaminants leaving Camp Roberts is at RM 102.3 on the Salinas River (see Figure 6). The surface water pathway extends 15 miles downstream to RM 87.3, which is just north of San Ardo, California (see Figure 7). The pathway consists entirely of river type water body. A U.S. Geological Service gage at Bradley records an annual mean flow of 363 cubic feet per second.

The Salinas River is regulated extensively by releases from dams on the San Antonio and Nacimiento rivers. The Nacimiento Dam, completed in 1957, and the San Antonio Dam, completed in 1965, are owned and operated by the Monterey County Flood Control and Water Conservation District to provide flood control and water conservation for the basin (Ref. 25). The Nacimiento and San Antonio dams are located approximately 1.5 miles and 2.5 miles, respectively, west of Camp Roberts.

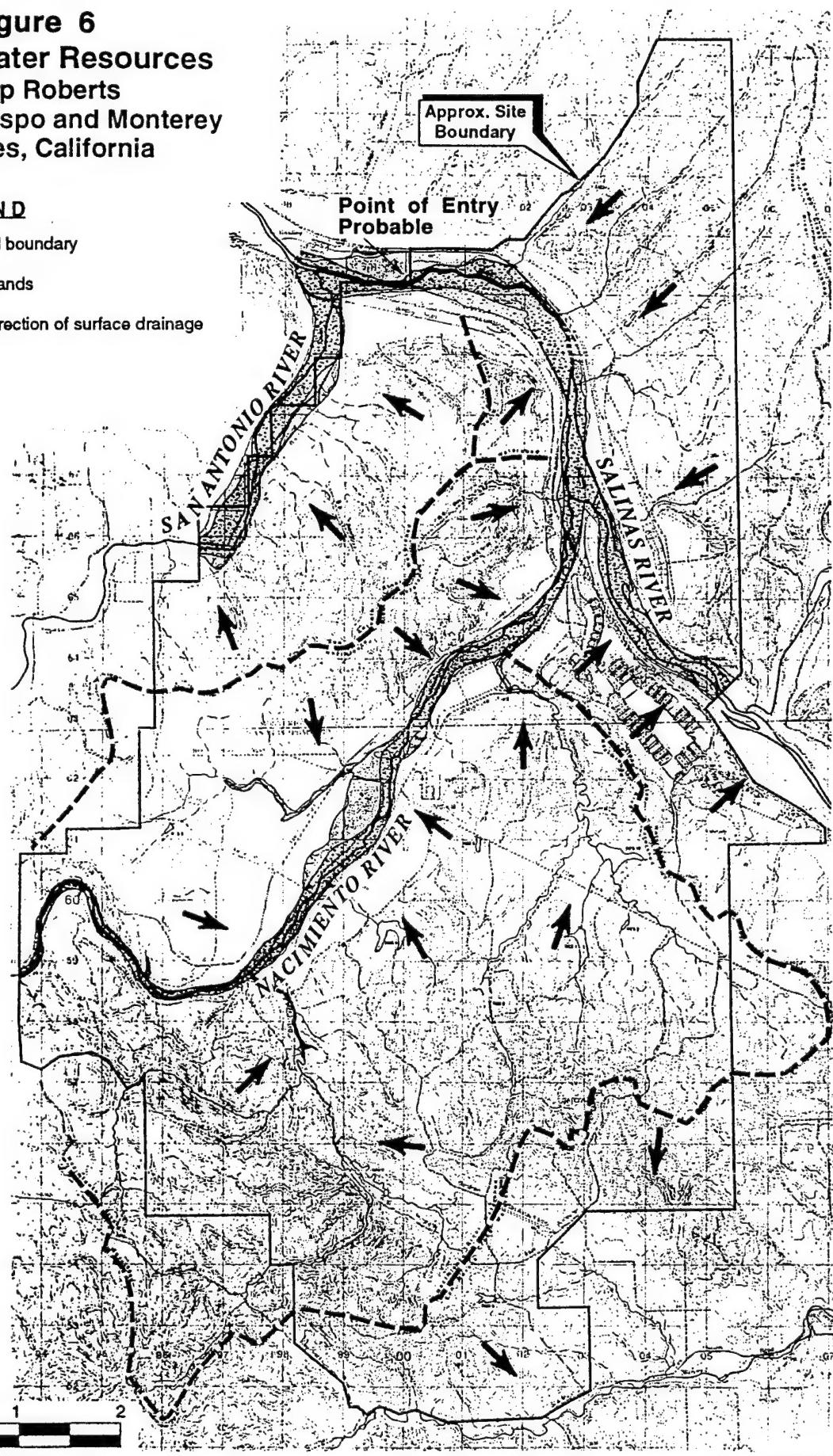
The 10-year floodplains of the Nacimiento, San Antonio, and Salinas rivers lie within the installation boundaries; however, because these rivers are regulated, the likelihood of flooding at Camp Roberts is substantially reduced. The 1-year, 24-hour rainfall is 2 inches, and the mean annual precipitation is 14 inches. Surface soils range in texture from clay loams and silty clays to sandy loams and gravelly loams (Ref. 1) and have permeabilities ranging from 0.5 to 1.5 centimeters per second (cm/s) on hillsides and hilltops and from 1.5 to greater than 15 cm/s in stream channels and terraces.

Camp Roberts has no permitted discharges to surface water. The wastewater treatment plant discharges directly to groundwater and is not required to have an NPDES permit. Stormwater discharges directly to natural drainageways over most of the installation. The cantonment areas at the Main Garrison and East Garrison are served by storm drainage systems that consist of 23,000 linear feet of storm drainage pipe, 2,500 feet of 60-inch drainage culverts, 50

Figure 6
Surface Water Resources
Camp Roberts
San Luis Obispo and Monterey
Counties, California

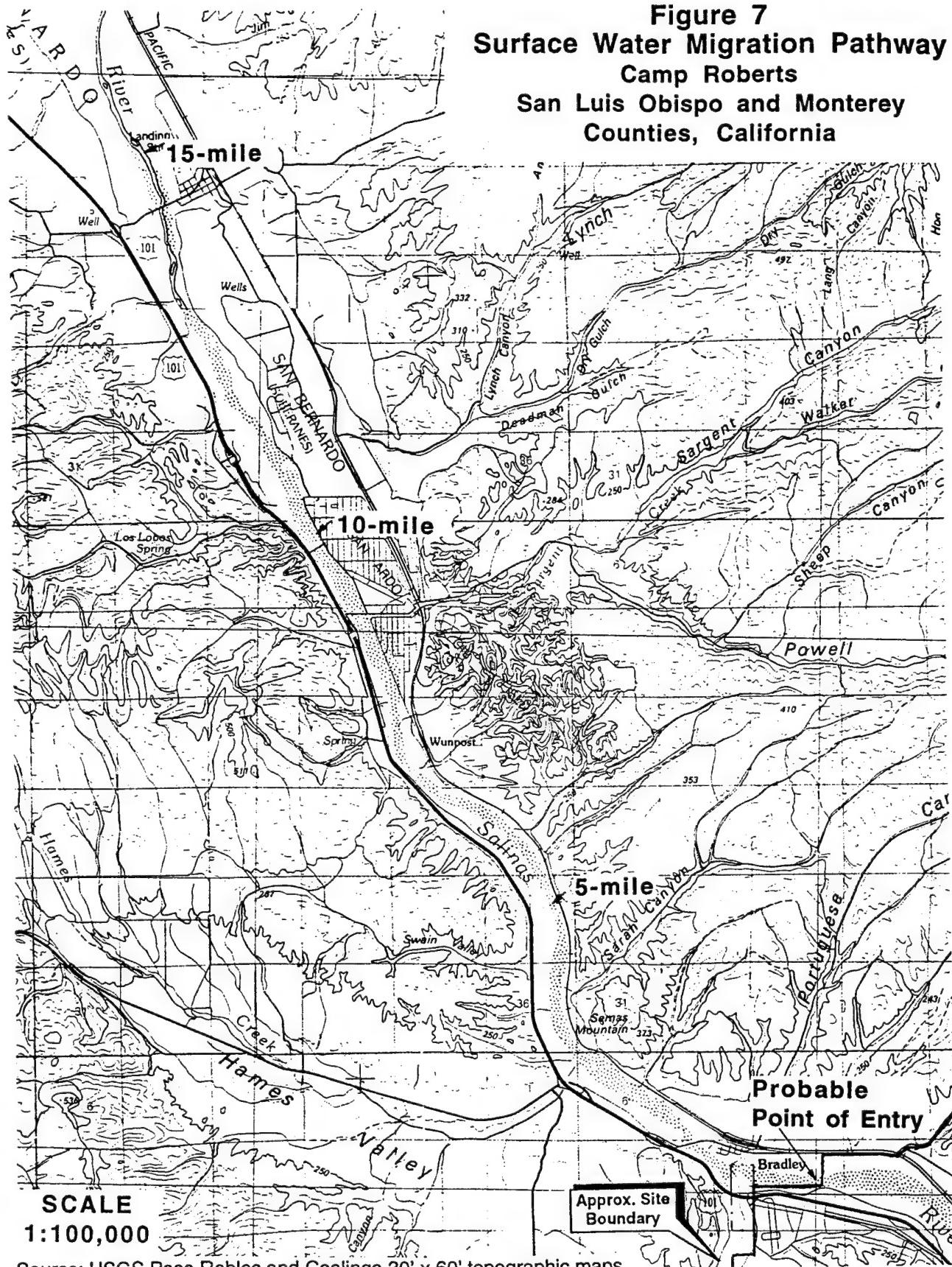
LEGEND

- Watershed boundary
- Major wetlands
- General direction of surface drainage



Source: EMAP, 1994

Figure 7
Surface Water Migration Pathway
Camp Roberts
San Luis Obispo and Monterey
Counties, California



catch basins, and five manholes (Ref. 1). Stormwater from the Main and East garrisons is conveyed, without treatment, to the Salinas River. There were no visual signs of contamination observed during the site visit.

5.2

SURFACE WATER TARGETS

There are no primary or secondary drinking water intakes located within the 15-mile surface water migration path from the PPE at Camp Roberts. Recreational use of the surface water on the installation and downstream include fishing and some boating and human contact. Although no primary target fisheries have been identified, secondary target fisheries include rainbow trout, blue gill, bass, and catfish which are occasionally stocked in the Salinas and Nacimiento rivers. There are no reported recreation closures associated with the surface water migration path.

Sensitive environmental resources at Camp Roberts and in the surrounding area include wetlands, sensitive species and their habitat, and two-areas of California State land designated for fish and game management (see Figure 8). Information pertaining to these sensitive environments was obtained from U.S. Fish and Wildlife Service National Wetland Inventory maps, Monterey County Water Resources Agency (Ref. 26), Monterey County Planning Department (Ref. 25), and the Camp Roberts Environmental Office.

Most wetlands in the area are classified as emergent or palustrine forested, scrub shrub, forested-scrub shrub, and are associated with streams and rivers (see Figure 6). The water regime for these wetlands is generally characterized as intermittently flooded. There are 23.8 miles of wetland frontage, including palustrine forested and palustrine scrub-shrub wetlands, associated with the Salinas River along the 15-mile surface water migration path from the PPE.

There are numerous Federal and state designated sensitive species occurring on Camp Roberts (see Table 2). The Environmental Office of Camp Roberts is currently conducting a sensitive species survey of the installation. A monitoring program for the San Joaquin kit fox, a federal-listed endangered and state-listed threatened species, was initiated in October 1988 and is currently ongoing.

Two parcels of California State lands share a boundary with Camp Roberts. These areas comprise the Big Sandy Wildlife Management Area and are used for open space recreation, hunting and fishing. These areas also contain nesting and feeding habitat used by sensitive species, including blue heron, yellow warbler, and Least Bell's vireo.

Figure 8
Sensitive Environments
Camp Roberts
San Luis Obispo and Monterey
Counties, California

LEGEND

San Joaquin Kit Fox Distribution:

- KF-a Absent
- KF-U Uncommon
- KF-C Common
- KF-A+ Abundant
- KF-? Unknown

Species Ranges, Sightings, and Habitat Areas:

Wildlife

- GE Golden Eagle Nesting Site Area
- H Blue Heron Rockery
- V Least Bells Vireo and Yellow Warbler Sightings

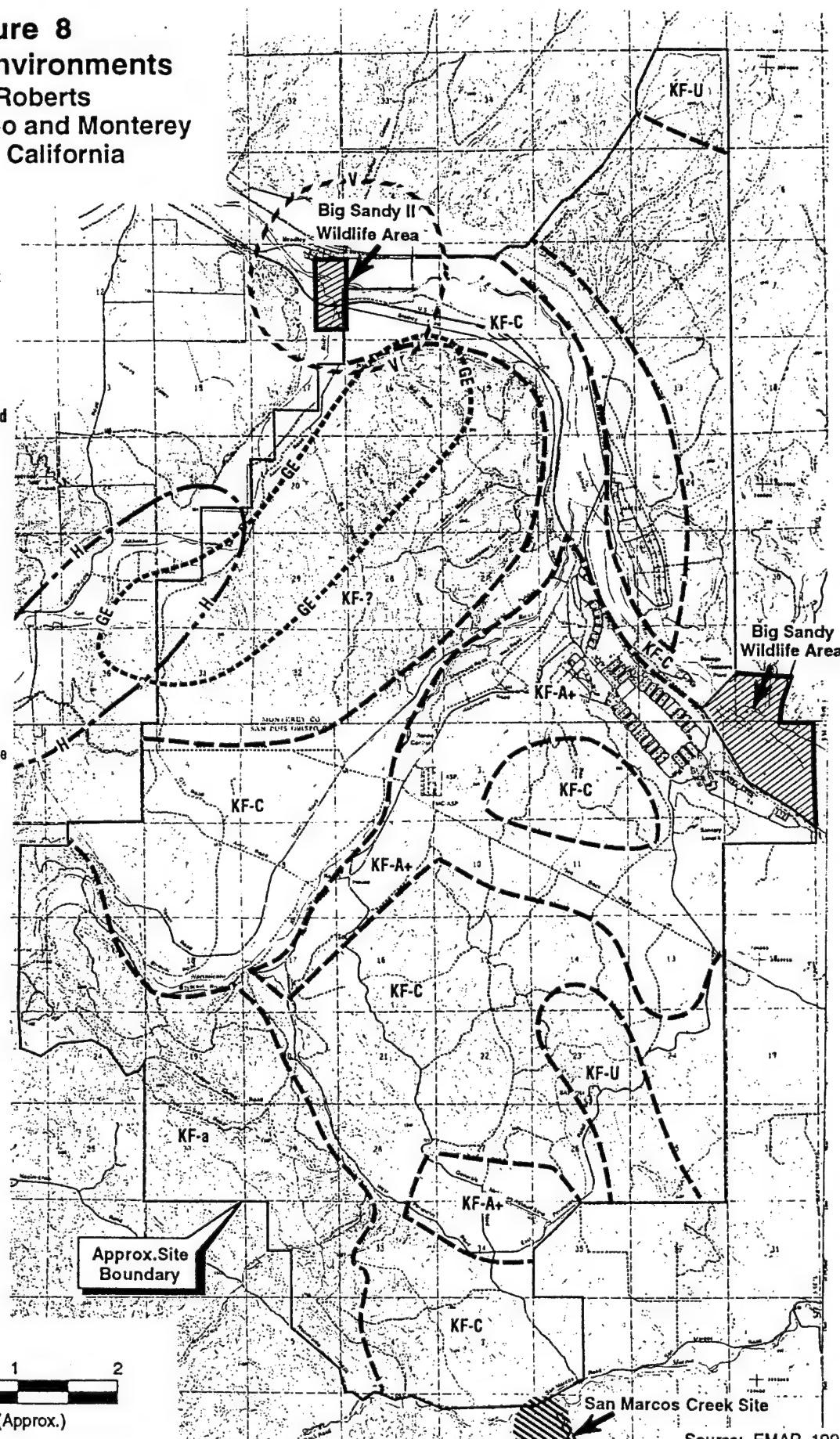
Plants

- Pismo Clarkia (Clarkia Speciosa ssp immaculata)

Special Areas:

- San Marcos Creek Site - Site 401905, California Natural Areas Coordinating Council

- Big Sandy Wildlife Area - Managed by California Department of Fish and Game



Source: EMAP, 1994

Table 2 Sensitive Species at Camp Roberts

Common Name <i>Scientific Name</i>	Status	Expected Habitat
MAMMALS		
Monterey dusky-footed woodrat <i>Neotoma fuscipes luciana</i>	CSC, F2	Chaparral, dense woodlands
Salinas pocket mouse <i>Perognathus inornatus psammophilus</i>	CSC, F2	Sandy soils in grassland and sparse shrubland
San Joaquin pocket mouse <i>Perognathus inornatus inornatus</i>	SA	Sandy soils in grassland and sparse shrubland
American badger <i>Taxidea taxus</i>	CSC	Various
ringtail <i>Bassariscus astutus</i>	FP	Various
San Joaquin kit fox <i>Vulpes macrotis mutica</i>	ST, FE	Various
California mastiff bat <i>Eumops perotis californicus</i>	CSC, F2	Various
pallid bat <i>Antrozous pallidus</i>	CSC	Various
Townsend's western big-eared bat <i>Plecotus townsendii townsendii</i>	CSC, F2	Various
BIRDS		
Merlin <i>Falco columbarius</i>	CSC	Grasslands, Woodlands
prarie falcon <i>Falco mexicanus</i>	CSC	Grasslands, Savannahs
Cooper's hawk <i>Accipiter cooperii</i>	CSC	Woodlands
sharp-shinned hawk <i>Accipiter striatus</i>	CSC	Various
bald eagle <i>Haliaeetus leucocephalus</i>	SE, FP, FE	Conifer stands and large bodies of water

Common Name <i>Scientific Name</i>	Status	Expected Habitat
BIRDS (continued)		
golden eagle <i>Aquila chrysaetos</i>	CSC, FP	Various
Ferruginous hawk <i>Buteo regalis</i>	CSC, F2	Grassland
northern harrier <i>Circus cyaneus</i>	CSC	Grassland, Riparian
osprey <i>Pandion haliaetus</i>	CSC	Trees near open water
burrowing owl <i>Speotyto (=Athene) cunicularia</i>	CSC	Grassland
loggerhead shrike <i>Lanius ludovicianus</i>	CSC, F2	Woodland, Riparian, Shrubland
yellow-breasted chat <i>Icteria virens</i>	CSC	Riparian woodlands
yellow warbler <i>Dendroica petechia brewsteri</i>	CSC	Riparian woodlands
California horned lark <i>Eremophila alpestris actia</i>	CSC, F2	Grassland, Pastureland
tricolored blackbird <i>Agelaius tricolor</i>	CSC, F2	Grassland, Emergent Wetland
black-crowned night heron <i>Nycticorax nycticorax</i>	SA	Roost and nest in trees
great blue heron <i>Ardea herodias</i>	SA	Roost and nest in tree groves
great egret <i>Casmerodius albus</i>	SA	Roost and nest in tree groves
long-billed curlew <i>Numenius americanus</i>	CSC, F2	Grassland

Common Name <i>Scientific Name</i>	Status	Expected Habitat
REPTILES (non aquatic)		
California horned lizard <i>Phrynosoma coronatum frontale</i>	CSC	Open sandy areas of woodland, riparian, shrubland
San Joaquin whipsnake <i>Masticophis flagellum ruddocki</i>	CSC	Woodland, Shrubland
two-striped garter snake <i>Thamnophis hammondii</i>	C2	Riparian
silvery legless lizard <i>Anniella pulchra pulchra</i>	CSC	Woodland or shrubland, sandy or loose organic soils with leaf litter
PLANTS		
Pismo clarkia <i>Clarkia speciosa ssp immaculata</i>	SR, C2	

Status:

- FE = Listed as Endangered by the Federal Government
- SE = Listed as Endangered by the State of California
- ST = Listed as Threatened by the State of California
- R = Listed as Rare by the State of California
- F2 = Category 2 Candidate for Listing by the Fish and Wildlife Service
- CSC = California Department of Fish and Game Designated "Species of Special Concern"
- FP = California Department of Fish and Game Designated "Fully Protected"
- SA = California Department of Fish and Game Designated "Special Animal"

Source: Camp Roberts Environmental Office

SECTION 6

6.0

SOIL EXPOSURE PATHWAY AND TARGETS

6.1

SOIL EXPOSURE PATHWAY

There are ten areas of known or suspected release to the soil exposure pathway. Known releases of contaminants from the landfill area and at Tank Site 936 are evident in the soils surrounding these areas. Suspected releases associated with: the buried drums at the UDLP site, DU at Ranges 5, 12 and 18, OB/OD operations at Ranges Y39, M37 and possibly M40, and activities at the Engineering Yard may have entered the soil exposure pathway. Access to these sites is not restricted.

The releases at the landfill and at Tank Site 936 are currently under investigation by GEOSYSTEM. Sampling results from these areas are provided in Appendices D and E. A soil sample from the buried drum site was tested for TPH, SVOCs and metals. Lead was detected at a concentration of 40 mg/kg: no other compounds were detected. There have been no soil sampling activities at the Engineering Yard or Ranges L5, L12, L18, Y39, M39, and M40.

6.2

SOIL EXPOSURE TARGETS

The ten sites having known or suspected releases to the soil exposure pathway are currently in use as training facilities, OB/OD areas, range areas, or waste disposal areas. There are no residences, schools, or day care facilities within 200 feet of known or suspected releases to soil. There are worker populations, ranging from one to more than 40, at the landfill, Tank Site 936, Engineering Yard, UDLP (buried drum site), and range areas. Terrestrial sensitive environmental targets at each of these locations include habitat of the federal endangered San Joaquin kit fox. The population within one mile includes 345 people on-site and 416 people within one mile of the installation boundary (i.e., 43 people from 0 to $\frac{1}{4}$ mile, 131 people from $\frac{1}{4}$ to $\frac{1}{2}$ mile, and 242 people from $\frac{1}{2}$ to 1 mile).

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SECTION 7

7.0 AIR PATHWAY AND TARGETS

7.1 AIR PATHWAY

No releases to the air pathway were observed during the site visit. Interviews with site personnel and reviews of existing documents found no previously reported incidences of releases to the air pathway. There have been no reports of odors, citizens complaints, or ill health effects resulting from the migration of contaminants along the air pathway from sources at Camp Roberts. Therefore, there are no known or suspected releases of contaminants to air at Camp Roberts.

7.2 AIR TARGETS

There are no primary targets of the air pathway for Camp Roberts. There are 50 onsite residents and the nearest offsite residence is approximately 800 feet from the installation boundary. Secondary targets include wetlands, endangered species habitat, the Big Sandy Wildlife Management Areas, and approximately 8,830 individuals living within four miles of the installation. Within a $\frac{1}{2}$ -mile radius of the installation, secondary targets of the air pathway include: approximately 1,132 acres of wetlands; and habitat for rare or endangered species, including the least Bell's vireo and great blue heron.

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SECTION 8

This section presents the findings and recommendations of the PA conducted on Camp Roberts, California.

SUMMARY OF PRELIMINARY ASSESSMENT FINDINGS

This PA identified fourteen (14) ESOs; i.e., sites identified as known or potential sources of CERCLA contaminant releases (see Section 3.1). The PA also addressed sites previously referenced as suspected sources of CERCLA releases but for which the PA determined there was insufficient evidence available to classify them as potential CERCLA release sites (see Section 3.2).

There are numerous known and suspected releases of POL products across the ranges and training areas and in the vicinity of maintenance facilities. These releases:

- date from WWII through the 1970s when environmental compliance requirements brought them to an end;
- are believed to have been relatively minor and sporadic (no concentrated disposal practices were uncovered); and
- are in most instances, most probably covered by the CERCLA petroleum exclusion.

Based on available evidence, the areas of most environmental significance are being adequately addressed:

- Tank Site 936 -- where leakage from two 25K gallon gasoline USTs is currently being remediated.
- Sanitary Landfill -- where extensive sampling and analysis is ongoing but has yet to detect an adverse impact on groundwater quality.

Of the remaining ESOs, the most significant, in order of importance are:

- The open storage of deteriorated PCB transformers in the Engineering Yard. This deficiency, stressed in the Installation Assessment (Ref. 36), represents a serious ongoing compliance violation and poses the significant potential for a CERCLA release.

- The OB/OD areas, particularly Range Y39, used extensively until 1993.
- The buried drums in the UDLP area of operations; the site has yet to be fully characterized or investigated.

Site investigations to identify and characterize possible CERCLA releases, and to determine the need, if any, for remedial action, should be conducted at the following areas:

- Engineering Yard
- Ranges Y39 and M40
- UDLP buried drum area.
- Old artillery firing points [At this time, the evidence does not suggest the need for a full SI at all old artillery firing points (see discussion in Section 3.1.13). At a minimum, however, these areas should be visually inspected for signs of contamination and sampling sufficient to verify/characterize possible contamination should be conducted.].

Immediate corrective action must be taken regarding the open storage of PCB transformers.

8.2

RECOMMENDATIONS FOR FURTHER ACTION

- (1) No recommendations are made regarding the Sanitary Landfill or Tank Site 936 because each is well beyond the PA phase; the Sanitary Landfill is undergoing sampling under an SI and Tank Site 936 is in the RA phase.
- (2) An SI should be conducted of the Engineering Yard to identify and characterize possible CERCLA releases associated with the PCB transformers, past and current pesticide operations and the water tanks covered with presumed asbestos containing material, and to determine the need for remedial action, if any.
- (3) An SI should be conducted of the old OB/OD areas (Ranges Y39 and M40) to identify and characterize possible CERCLA releases and to determine the need for remedial action, if any. This action should be closely coordinated with the NGB-ARE Compliance Section to ensure compliance with most recent Army guidance on OB/OD issues and all RCRA requirements.

- (4) An SI should be conducted to identify and characterize possible CERCLA releases associated with the buried drums in the UDLR area of operations, and to determine the need for remedial action, if any. At a minimum, the need for a removal action seems evident.
- (5) Visual inspection and minimal sampling (as outlined in Section 8.1) of the old field artillery points should be conducted.

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LIST OF ACRONYMS USED
APPENDIX A

A**LIST OF ACRONYMS USED**

ARNG	Army National Guard
APCD	Air Pollution Control District
bgs	below ground surface
CA ARNG	California Army National Guard
cm/s	centimeters per second
CSD	Community Services District
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
DU	Depleted Uranium
EOD	Explosive Ordnance Disposal
ESO	Environmentally Significant Operations
EPA	U.S. Environmental Protection Agency
ERM	Environmental Resources Management, Inc.
ERNS	Emergency Response Notification System
gpm	gallons per minute
HRS	Hazard Ranking System
IRP	Installation Restoration Program
kg/mo	kilograms per month
LUSTs	Leaking Underground Storage Tanks
MATES	Mobilization and Training Equipment Site
mgd	million gallons per day
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NGB	National Guard Bureau
NPDES	National Pollutant Discharge Elimination System
NRC	Nuclear Regulatory Commission
NPL	National Priority List
OB/OD	Open Burning/Open Demolition
OMS	Organizational Maintenance Shop
PA	Preliminary Assessment
PATEC	Pacific Technical Corporation
PCBs	Polychlorinated Biphenyls
POL	Petroleum, Oil and Lubricants
PPE	Probable Point of Entry
RA	Remedial Action
RCRA	Resource Conservation and Recovery Act
RM	River Mile
RWQCD	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SATCOM	Satellite Communications
SI	Site Inspection
SOW	Statement of Work
SPL	State Priority List
SVOC	Semi-Volatile Organic Compounds

TIC	Technical Information Center
TPH	Total Petroleum Hydrocarbons
TSD	Treatment, Storage and Disposal
UDLP	United Defense Limited Partnership
USAEC	U.S. Army Environmental Center
USGS	U.S. Geological Survey
USTs	Underground Storage Tanks
USTHAMA	U.S. Toxic and Hazardous Materials Agency
UXO	Unexploded Ordnance
WWII	World War II

REFERENCES
APPENDIX B

REFERENCES

- 1 Environmental Sciences Associates, Inc. 1994. *Camp Roberts Environmental Management Analysis Program (EMAP) Phase II: Resource Management Study*. Prepared for California Army National Guard National Guard Bureau under Contract No. DAHA04-88-C-0023.
- 2 Telephone conversation with Heritage Ranch Homeowners Association. 8 March 1995.
- 3 Interviews with Mr. Brian Duke (Environmental Planner, Camp Roberts) and Mr. Albert Davis (Camp Roberts Historian and retired employee). 29 November, 1, 2 December 1994.
- 4 GEOSYSTEM Consultants, Inc. 1993. *Verification Ground Water and Vadose Zone Monitoring*. Prepared for the State of California, Office of the State Architect.
- 5 *Master Plan Report, Camp Roberts, California*. Prepared as directed by OTAG letter dated 1 November 1986, Subject: Site Master Plan and in accordance with NGR 415-5, AR210-20, TM 5-803-1 and TB ENG 353.
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- 14 Interview with SFC Michael Grove (MATES, Camp Roberts). 30 November 1994.
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- 17 Interview with Mr. Mike Foster (former Fire Chief, Camp Roberts). 2 December 1994.
- 18 Letter addressed from Mr. Brian Duke (Environmental Planner, Camp Roberts) to Ms. Carol Snead (ERM). 10 January 1995.
- 19 Correspondence from the files of Brian Duke (Environmental Planner, Camp Roberts) regarding the discovery of an old barrel disposal site near Building 7026. 1993.
- 20 State of California, California Regional Water Quality Control Board, Central Coast Region. 1994. *Heritage Ranch CSD, Continuation of NPDES Permit No. CA 0048941 (Order No. 91-10)*.
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- 24 Interview with Mr. Fred Laballister (Training Office, Camp Roberts). 30 November 1994.
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- 26 Ecology Branch, Bureau of Reclamation, Denver Office. 1992. *Biological Resources of the Salinas River Basin, Monterey County, California: A Preliminary Assessment.*
- 27 Interview with WO1 Paul Ricketts (MATES Wheeled Vehicle Motor Pool, Camp Roberts). 1 December 1994.
- 28 Interview with Mr. Earl Madison (former Director of Facilities Engineering, Camp Roberts). 2 December 1994.
- 29 Letter addressed from Mr. Brian Duke (Environmental Planner, Camp Roberts) to Ms. Carol Snead (ERM). 24 March 1995.
- 30 GEOSYSTEM Consultants, Inc. 1995. *Additional Site Characterization, Fourth Quarter 1994 Detection Monitoring and Annual Detection Monitoring Summary, Solid Waste Disposal Facilities, Camp Roberts, California.* Prepared for the State of California, Office of the State Architect under Agreement No. CS 6919, Work Order No. MAR 121.
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- 32 Telephone conversation with Mr. Brian Duke (Environmental Planner, Camp Roberts). 29 March 1995.
- 33 Army Regulation (AR) 200-1, Environmental Protection and Enhancement. 23 April 1990.
- 34 Telephone conversation with Mr. Jim Quint (EPA Region IX). 29 March 1995.
- 35 Letter from Mr. Kenneth R. Jones, Executive Officer, California Central Coast RWQCB, to Mr. Dave Clevenger, Camp Roberts. 6 May 1983.
- 36 Chemical Systems Laboratory. 1983. *Installation Assessment of Camp Roberts, California. Report No. 196-A.* Prepared for Commander, Fort Ord, and USATHAMA. February, 1993.
- 37 Telephone interview with Mr. Mark Frederick (Department of Public Works, Camp Roberts). 22 June 1995.
- 38 Letter from Mr. Brian Duke (Environmental Planner, Camp Roberts). 22 June 1995.
- 39 Telephone interview with CW4 Loren Adams (MATES Supervisor, Camp Roberts). 14 June 1995.

40 Facsimile transmittal from Mr. Brian Duke (Environmental Planner, Camp Roberts) to Mr. Larry Ward (ERM). 12 October 1995.

REAL ESTATE TRANSACTIONS
APPENDIX C

REAL ESTATE TRANSACTIONS*

C.1 ACQUISITION OF CAMP ROBERTS

C.1.1 Size and Various Types of Land Holdings

Seven parcels were purchased or obtained under a Declaration of Taking in 1943 too make up the total 44,435 acres of Camp Roberts. Miscellaneous land holding of various sizes have been sold through the years, so that at present, the Government has 42,362 acres in Full Fee Simple Title.

There are two small in grant parcels. One is .03 acres to allow passage under the Southern Pacific Railroad tracks. The other is a utility right of way across property deeded tot he State of California in a previous land disposal. The Sacramento district has indicated there may be some parts of Camp Roberts subject to reversionary interests. They will research property records to verify whether or not reversionary interest exist.

TABLE C-1
SUMMARY OF REAL ESTATE ACQUISITIONS

TRACT	ACRES	ACQUIRED FROM	DATE
1	35791	Wells Fargo Bank & Trust Co.	11 DEC 42
2	320	Edward P.E. & Emil T. Kruse	24 DEC 42
3	320	Carl F. Rothe	31 DEC 42
4.	984	Southern Pacific Milling Company	15 JAN 43
5	160	Grace Thornburgh & Irene J. Carpenter	15 JAN 43
6	6,300	B.F. Porter Estate	16 FEB 43
7.	560	Frank H. & Amelia Newlove	13 MAY 43
TOTAL	44,435		

*Source: Untitled Draft Document. Obtained from Earl A. Madison, Resource Planning Officer, Camp Roberts.

C.1.2 Acquisition Costs for Land and Improvements:

The land for the Nacimiento Replacement Center (Camp Roberts) was originally acquired by lease. The property was then purchased either directly or by condemnation under the right of eminent domain. In all, seven parcels were purchased at a cost of \$546,500. Over the years, land holding of varying sizes have been sold off so that presently the Government's investment in land is \$519,700.

As building and facilities have outlined their usefulness or become a hazard, they have been sold or demolished. The cost of the original installation was \$27,830,700. This figure is based on construction and major rehabilitation and does not include normal maintenance.

The cost of improvements of the facilities on the SATCOM site are approximately \$120,000,000.

TABLE C-2
ORIGINAL ACQUISITIONS

TRACT	ACRES	TYPE INSTRUMENT	COST \$
1	35791	Direct Purchase	422000
2	320	Direct Purchase	3800
3	320	Direct Purchase	3800
4	984	Declaration of Taking	15000
5	160	Declaration of Taking	800
6	6300	Declaration of Taking	78000
7	560	Declaration of Taking	23100
TOTAL	44,435		546,500

C.2 SUMMARY OF OUTGRANTS

The Sacramento District, Corps of Engineers administers the outgranting program at Camp Roberts. Seventeen current leases granted to AMOCO Production Company , DACA05-9-87-542 thru 558 are in process of termination because their exploratory well failed to indicate any potential for oil in marketable quantities.

The remainder of the current outgrants are summarized on Table C-3.

TABLE C-3
SUMMARY OF OUTGRANTS

TYPE	CONTRACT NO	GRANTEE	PURPOSE	FROM	TO
EASEMENT	SFRE(s)-572	AT&T Communications	R/W for repeater houses	1/55	1/05
EASEMENT	SFRE(s)-679	PG & E	12KV electric line	2/56	2/06
EASEMENT	SFRE(s)-733	County of SLO	R/W for road	2/57	Indef
EASEMENT	SFRE(s)-846	Eldon Root	R/W for road	10/58	Indef
EASEMENT	DA(s)-04-203-ENG-1092	County of SLO	R/W for road	4/60	Indef
EASEMENT	DA-04-167-ENG-2727	State of CA	R/W for Hwy 101	6/64	Indef
EASEMENT	DA-04-167-ENG-3047	County of SLO	R/w for road	9/63	Indef
EASEMENT	DA-04-167-ENG-3742	Mobil Oil Co.	Pole & Oil line	5/65	4/02
EASEMENT	DA-04-167-ENG-3894	State of CA	R/W for rest stops	1/66	Indef
EASEMENT	DACA05-2-67-88	PG & E	R/W for power line	4/67	4/17
LICENSE	DACA05-1-70-8	Pacific Bell	R/W for Commo cable	9/69	9/94
LEASE	DACA05-1-70-9	Pacific Bell	Use of 6 poles	9/69	9/94
EASEMENT	DACA05-2-70-20	PG & E	R/W for u/g power line	11/69	11/19
LICENSE	DACA05-3-74-558	FMC Corp.	Use of ranges	12/73	
EASEMENT	DACA05-2-74-615	PG & E	R/W for u/g gas line	6/74	6/24
LEASE	DACA05-1-79-533	CA ARNG	Use of housing	5/79	2/96
LICENSE	DACA05-3-84-544	FMC Corp	Use of Range 15	1/84	
LICENSE	DACA05-3-85-533	County of SLO	Use of EOD Range	2/85	1/95
LICENSE	DACA05-3-85-538	AT & T Communications	Use of road	1/85	1/95
RIGHT OF ENT		Pacific Bell	ROE for fiber optics	TBA	
LEASE	DACA05-9-87-572	Carl J. Taffera	Oil/gas 250 acres	5/87	4/97
LICENSE	DACA05-3-88-501	State of Ca	Elk pasture	10/87	
PERMIT	DACA05-4-88-534	U.S.G.S.	Stream Gauging	9/87	9/97
LICENSE	DACA05-3-89-532	CA ARNG	Use of Cp Roberts	1/89	Indef
LICENSE	DACA05-3-91-506	Tim Bruinsma	R/W for road	12/90	12/95
			Livestock grazing		
			Livestock grazing		

C.3 DISPOSALS, PASTS & PROPOSED

C.3.1 Past Disposals

A total of 2,073 acres of the original purchase have been disposed of, leaving a balance of 42, 363 acres. Past disposals are summarized as follows:

**TABLE C-4
PAST DISPOSALS**

DATE	DESCRIPTION	ACRES	COST \$
16 SEP 46	Disposal to WAA	2.41	31.00
20 JAN 59	Quitclaim to Ernest F. Shuey	197.00	2,433.00
3 MAR 59	Quitclaim to G.F. & P. Stoesser	90.00	1,111.00
3 MAR 59	Quitclaim to T.H. Kelsey	370.00	4,570.00
27 JUL 65	Quitclaim to T.H. Kelsey	27.58	340.00
29 OCT 65	Quitclaim to County of SLO	2.85	35.00
12 SEP 74	Quitclaim to State of CA	615.00	7,687.00
12 SEP 74	Quitclaim to State of CA	120.00	1,500.00
12 SEP 74	Quitclaim to William C. Stephens	40.00	500.00
12 SEP 74	Quitclaim to Curtis Post	152.75	1,909.00
12 SEP 74	Quitclaim to Violet Rose	454.75	5,684.00
	TOTALS	2,072.34	25,800.00

C.3.2 Proposed Disposals

The 27-29 March 1984 Survey Report of Executive Order 12348 for Camp Roberts recommended that 200 acres of Area K (lying north and east of the Salinas River,) be reported as excess. In February 1985, the National Guard initiated steps to excess the 200 acres, however, state and federal wildlife personnel objected to the sale of the property. Efforts to transfer the land to state or federal wildlife organizations were unsuccessful and the land remains a part of Camp Roberts. A resurvey in 1991 again recommended this parcel be excessed. Action is pending at the Sacramento District Engineer.

There are no other planned or proposed land disposals known.

C.4 PROPOSED ACQUISITIONS

In July 1989, a letter was forwarded through channels to the Sacramento District Corps of Engineers requesting acquisition of approximately 5,609 acres in 3 parcels. This acquisition is urgently needed to provide an adequate safety buffer for stray explosive projectiles and parachute flares that occasionally fall outside the impact area and installation boundary. A \$2,500,000 lawsuit was initiated by an angry landowner because of the stray rounds and flares.

Parcel 1 includes about 3,950 acres, is relatively flat agricultural area with very few trees. There are sharp bluffs that run along the east and south sides down to the San Antonio River. Parcels 2 and 3 compromise about 1,300 acres of land that is more hilly.

An additional temporary lease acquisition of approximately 26,700 acres was also proposed for the area between Camp Roberts and Fort Hunter-Liggett just northwest of the 5,609 acre area already discussed. This area would provide the capability for battalion-size maneuvers between the installations and avoid the 1-1/2 days of lost training time spent in road march. The area is approximately 8km wide at its greatest extent to 2 km at its narrowest between the Jolon-Bradley Road and the San Antonio Reservoir. The area is currently used primarily for agriculture, grazing and watershed protection. This lease would only be necessary in the event of mobilization of Camp Roberts.

The total area under consideration is approximately 31,950 acres and is currently being reviewed by the Real Estate Division of the Sacramento District, Corps of Engineers.

C.5 NEARBY PROPERTY VALUES

There are no nearby office/industrial parks in the immediate vicinity of Camp Roberts. Several areas are presently being developed as an office/industrial parks 12 miles to the south in Paso Robles as well as major development and expansion of shopping centers in the general area.

Prices for real estate in this area in a downward trend. In the vicinity of Camp Roberts, five acre plots suitable for construction of a home (where zoning allows) cost about \$60,000. Ten acre plots suitable for a home cost about \$100,000. For land in 20 to 40 acre parcels, the cost is about \$4,000 per acre. For over 100 acre parcels, the land is approximately \$2,500 per acre.

**DATA AND REPORT SUMMARY FROM
GEOSYSTEM LANDFILL REPORT
*APPENDIX D***

D

***DATA AND REPORT SUMMARY FROM GEOSYSTEM LANDFILL
REPORT***

Source: GEOSYSTEM Consultants, Inc. 1995. Additional Site Characterization, Fourth Quarter 1994 Detection Monitoring, and Annual Detection Monitoring Summary, Solid Waste Disposal Facilities, Camp Roberts, California. Prepared for the State of California, Division of the State Architect, under Agreement No. CS 6919, Work Order No. MAR 121.

TABLE D-1

ORGANIC CHEMICALS IN GROUND WATER SAMPLES
CAMP ROBERTS LANDFILL
(All units in ug/l - parts per billion)

<u>WELL NO.</u>	<u>DATE</u>	<u>ACETONE</u>	<u>BROMOFORM</u>	<u>CHLOROFORM</u>	<u>DIBROMO-CHLORO-METHANE</u>	<u>CHLORO-METHANE</u>	<u>BIS-(2-ETHYLHEXYL) PHTHALATE</u>	<u>BUTYL-BENZYL PHTHALATE</u>
MW-1	5/31/90 ⁽¹⁾	ND<10 ⁽²⁾	ND<1	ND	ND<1	ND<1	16	ND
	5/31/90(DUP)	38	ND<1	ND	ND<1	ND<1	14	ND
	08/14/90	ND<10	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5
	11/13/90	ND<10	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5
	02/12/91	ND<10	ND<1	ND<1	ND<1	ND<1	5	ND<5
	12/06/93	ND<10	ND<2	ND<2	ND<2	ND<5	NV ⁽³⁾	NV
	03/16/94	NA	NA	NA	NA	NA	ND<20	ND<10
	11/02/94	NA	ND<0.5	ND<0.5	ND<0.5	ND<0.5	NA	NA
MW-2	06/05/90	ND<10	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5
	08/14/90	ND<10	ND<1	ND<1	ND<1	ND<1	8	ND<5
	08/14/90(DUP)	ND<10	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5
	11/13/90	ND<10	ND<1	ND<1	ND<1	ND<1	ND<5	6
	11/13/90(DUP)	ND<10	ND<1	ND<1	ND<1	ND<1	ND<5	6
	02/12/91	ND<10	ND<1	ND<1	ND<1	ND<1	40	ND<5
	02/12/91(DUP)	ND<20	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5
	12/06/93	ND<10	ND<2	ND<2	ND<2	ND<5	NV	NV
	03/16/94	NA	NA	NA	NA	NA	ND<20	ND<10
	11/02/94	NA	ND<0.5	ND<0.5	ND<0.5	ND<0.5	NA	NA
MW-4	11/18/94	NA	1.1	0.6	1	0.6	ND<10	ND<10
MW-5	11/03/94	NA	0.8	0.5	0.8	ND<0.5	ND<10	ND<10
MW-6	11/02/94	NA	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<10	ND<10
MW-7	11/03/94	NA	0.5	ND<0.5	0.7	ND<0.5	ND<10	ND<10
MW-7	11/03/94(DUP)	NA	0.5	ND<0.5	0.7	ND<0.5	ND<10	ND<10
MW-8	11/03/94	NA	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<10	ND<10
MW-9	11/02/94	NA	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<10	ND<10
MW-10S	11/03/94	NA	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<10	ND<10
MW-10D	11/03/94	NA	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<10	ND<10
MW-11	11/02/94	NA	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<10	ND<10
MW-12	11/02/94	NA	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<10	ND<10
P-1	05/17/90	ND<10	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5
P-1	08/14/90	ND<10	ND<1	ND<1	ND<1	ND<1	5	ND<5
P-1	11/14/90	ND<20	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5
P-1	02/13/91	ND<20	ND<1	ND<1	ND<1	ND<1	9	ND<5
P-1	12/06/93	ND<10	ND<2	ND<2	ND<2	ND<5	NV	NV
P-1	03/16/94	NA	NA	NA	NA	NA	ND<20	ND<10
P-1	11/02/94	NA	ND<0.5	ND<0.5	ND<0.5	ND<0.5	NA	NA
P-2	05/17/90	ND<10	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5
P-2	08/14/90	ND<10	ND<1	ND<1	ND<1	ND<1	5	ND<5
P-2	11/14/90	ND<20	ND<1	ND<1	ND<1	ND<1	8	ND<5
P-2	02/12/91	ND<20	ND<1	ND<1	ND<1	ND<1	9	ND<5
P-2	12/06/93	ND<10	ND<2	ND<2	ND<2	ND<5	NV	NV
P-2	03/16/94	NA	NA	NA	NA	NA	ND<20	ND<10
P-2	11/02/94	NA	ND<0.5	ND<0.5	ND<0.5	ND<0.5	NA	NA
P-3	06/01/90	11	ND<1	NA	ND<1	ND<1	ND<5	NA
P-3	08/14/90	ND<10	ND<1	ND<1	ND<1	ND<1	34	ND<5
P-3	11/14/90	ND<20	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5
P-3	02/13/91	ND<20	ND<1	ND<1	ND<1	ND<1	19	ND<5
P-3	12/06/93	ND<10	ND<2	ND<2	ND<2	ND<5	NV	NV
P-3	03/16/94	NA	NA	NA	NA	NA	ND<20	ND<10
P-3	11/02/94	NA	ND<0.5	ND<0.5	ND<0.5	ND<0.5	NA	NA

NOTES: (1) Certificates of analysis not available for verification of these results.

(2) ND denotes not detected at detection limit indicated (where available).

(3) NV denotes Not Valid - data invalidated because of sample contamination by dimethyl phthalate. Dimethyl Phthalate proven to be a sampling artifact

TABLE D-2

PRIORITY POLLUTANT METALS IN GROUND WATER SAMPLES

CAMP ROBERTS LANDFILL

(All units in mg/l - parts per million^a)

WELL NO.	DATE	ALUMINUM	ARSENIC	BARIUM	CADMIUM	TOTAL CHROMIUM	HEXAVALENT CHROMIUM	COPPER	LEAD	MOLYBDENUM	NICKEL	VANADIUM	ZINC
MW-1	05/31/90	0.07	ND>0.005 ^b	0.086	ND>0.002	0.007	NA	ND>0.01	ND>0.002	ND>0.01	ND>0.02	0.02	ND>0.01
	5/31/90(DUP)	0.06	ND>0.005	0.089	ND>0.002	0.01	NA	ND>0.01	ND>0.002	ND>0.01	ND>0.01	0.03	ND>0.01
	08/1/90	ND>0.05	ND>0.005	0.119	ND>0.002	0.002	NA	ND>0.01	ND>0.002	ND>0.01	ND>0.02	0.03	ND>0.01
	11/1/90	ND>0.05	ND>0.005	0.169	ND>0.003	0.006	NA	ND>0.01	ND>0.002	ND>0.01	ND>0.02	0.11	ND>0.01
	02/12/91	ND>0.05	ND>0.005	0.167	ND>0.003	0.01	NA	ND>0.01	ND>0.002	ND>0.01	ND>0.02	0.02	0.39
	12/06/93	NA ^b	ND>0.01	0.17	ND>0.005	0.007	NA	ND>0.05	ND>0.005	ND>0.1	ND>0.05	ND>0.05	ND>0.05
MW-2	06/03/90	0.06	ND>0.005 ^b	0.176	ND>0.002	0.008	NA	ND>0.01	ND>0.002	0.01	ND>0.02	0.02	ND>0.01
	08/1/90	ND>0.05	ND>0.005	0.196	ND>0.002	0.01	NA	0.02	ND>0.002	ND>0.01	ND>0.02	0.02	ND>0.01
	8/1/90(DUP)	ND>0.05	ND>0.005	0.209	ND>0.002	0.009	NA	0.01	ND>0.002	ND>0.01	ND>0.02	0.02	ND>0.01
	11/1/90	ND>0.05	ND>0.005	0.172	ND>0.003	0.006	NA	ND>0.01	ND>0.002	0.01	ND>0.02	0.02	0.57
	11/1/90(DUP)	ND>0.05	ND>0.005	0.168	ND>0.003	0.005	NA	ND>0.01	ND>0.002	ND>0.01	ND>0.02	0.02	0.56
	02/1/91	ND>0.05	ND>0.005	0.21	ND>0.003	0.021	NA	ND>0.01	ND>0.002	ND>0.01	ND>0.02	0.01	0.95
	02/1/91(DUP)	ND>0.05	ND>0.005	0.2	ND>0.003	0.006	NA	ND>0.01	ND>0.002	ND>0.01	ND>0.02	0.01	0.92
	12/06/93	NA	ND>0.01	0.24	ND>0.005	0.007	NA	ND>0.05	ND>0.005	ND>0.1	ND>0.05	ND>0.05	ND>0.05
MW-4	11/1/94	NA	ND>0.2	0.087	ND>0.02	ND>0.02	ND>0.01	ND>0.01	ND>0.2	ND>0.1	ND>0.02	ND>0.02	ND>0.01
MW-5	11/03/94	NA	ND>0.2	0.15	ND>0.02	0.02	0.01	ND>0.01	ND>0.2	ND>0.1	ND>0.02	0.04	ND>0.01
MW-6	11/02/94	NA	ND>0.2	0.08	ND>0.02	ND>0.02	0.01	ND>0.01	ND>0.2	ND>0.1	ND>0.02	ND>0.01	ND>0.01
MW-7	11/03/94	NA	ND>0.2	0.17	ND>0.02	0.02	0.01	ND>0.01	ND>0.2	ND>0.1	ND>0.02	0.02	ND>0.01
MW-8	11/03/94	NA	ND>0.2	0.05	ND>0.02	ND>0.02	ND>0.01	ND>0.01	ND>0.2	ND>0.1	ND>0.02	0.05	0.02
MW-9	11/02/94	NA	ND>0.2	0.06	ND>0.02	0.03	0.01	ND>0.01	ND>0.2	ND>0.1	ND>0.02	ND>0.02	ND>0.01
MW-10	11/03/94	NA	ND>0.2	0.16	ND>0.02	ND>0.02	ND>0.01	ND>0.01	ND>0.2	ND>0.1	ND>0.02	0.03	0.02
MW-10D	11/02/94	NA	ND>0.2	0.12	ND>0.02	0.02	0.01	ND>0.01	ND>0.2	ND>0.1	ND>0.02	ND>0.02	ND>0.01
MW-11	11/02/94	NA	ND>0.2	0.21	ND>0.02	ND>0.02	0.01	ND>0.01	ND>0.2	ND>0.1	ND>0.02	0.04	ND>0.01
MW-12	11/02/94	NA	ND>0.2	0.15	ND>0.02	ND>0.02	ND>0.01	ND>0.01	ND>0.2	ND>0.1	ND>0.02	ND>0.02	ND>0.01
P-1	05/17/90	0.06	ND>0.005	0.077	ND>0.002	0.008	NA	ND>0.01	ND>0.002	ND>0.01	ND>0.01	ND>0.01	ND>0.01
	08/1/90	6.09	0.06	0.158	ND>0.002	0.038	NA	0.01	0.008	ND>0.01	ND>0.01	0.04	0.04
	11/1/90	0.3	0.005	0.105	ND>0.003	0.01	NA	ND>0.01	ND>0.002	ND>0.01	ND>0.02	0.01	0.06
	02/1/91	ND>0.05	ND>0.005	0.134	ND>0.003	0.011	NA	ND>0.01	ND>0.002	ND>0.01	ND>0.02	0.02	0.09
	12/06/93	NA	ND>0.01	0.2	ND>0.005	0.015	NA	ND>0.05	ND>0.005	ND>0.1	ND>0.05	ND>0.05	ND>0.05
P-2	05/17/90	0.09	ND>0.005	0.043	ND>0.002	0.008	NA	0.02	ND>0.002	ND>0.01	ND>0.02	0.02	ND>0.01
	08/1/90	ND>0.05	ND>0.005	0.043	ND>0.002	0.01	NA	0.02	ND>0.002	ND>0.01	ND>0.02	0.02	ND>0.01
	11/1/90	ND>0.05	ND>0.005	0.072	ND>0.003	0.01	NA	ND>0.01	ND>0.002	ND>0.01	ND>0.02	0.02	0.36
	02/1/91	ND>0.05	ND>0.005	0.059	ND>0.003	0.011	NA	ND>0.01	ND>0.002	ND>0.01	ND>0.02	0.01	0.26
	12/06/93	NA	ND>0.01	0.16	ND>0.005	0.013	NA	ND>0.05	ND>0.005	ND>0.1	ND>0.05	ND>0.05	ND>0.05
P-3	08/1/90	5.58	0.005	0.093	ND>0.002	0.052	NA	0.02	0.006	ND>0.01	ND>0.02	0.05	0.05
	11/1/90	ND>0.05	ND>0.005	0.067	ND>0.003	0.005	NA	ND>0.01	ND>0.002	ND>0.01	ND>0.02	0.01	0.2
	02/1/91	ND>0.05	ND>0.005	0.061	ND>0.003	0.011	NA	ND>0.01	ND>0.002	ND>0.01	ND>0.02	0.01	0.03
	12/06/93	NA	ND>0.01	0.095	ND>0.005	0.005	NA	ND>0.05	ND>0.005	ND>0.1	ND>0.05	ND>0.05	ND>0.05

NOTES:
 (1) ND denotes Not Detected at detection limit indicated.
 (2) NA denotes Not Analyzed.

TABLE D-3
**GENERAL MINERALS AND OTHER PARAMETERS IN GROUND WATER
 CAMP ROBERTS LANDFILL**
 $(\text{All units in mg/l - parts per million})$

NOTES: (1) ND denotes Not Detected at detection limit indicated.
(2) NA denotes Not Analyzed.

TABLE D-4
HALOGENATED ORGANIC COMPOUNDS IN PORE WATER SAMPLES
CAMP ROBERTS LANDFILL
(All units in $\mu\text{g/l}$ - parts per billion)

LUMINATOR No.	DATE	CHLOROTHANE	CHLOROPRORANE	CHLOROBENZENE	1,4-DICHLOROBENZENE	DICHLORO- METHANE	1,1'- DICHLORO- ETHANE	1,2'- DICHLORO- ETHANE	CHLORO- ETHYLENE	TRANS-1,2'- DICHLORO- ETHYLENE	METHYLENE CHLORIDE	TETRA- CHLORO- ETHYLENE	TRICHLORO- ETHYLENE	TRICHLORO- FLUOROMETHANE	
L-1	02/13/91 12/06/93 11/03/94	ND<1 ^a ND<5 7.5	ND<1 ND<5 0.7	ND<1 ND<5 1.1	NA ^b NA ND<0.5	ND<1 ND<5 ND<0.5	ND<1 ND<5 1.2								
L-2	02/13/91 12/06/93 11/03/94	ND<1 ND<5 ND<0.5	ND<1 ND<5 ND<0.5	ND<1 ND<5 ND<0.5	NA NA ND<0.5	ND<1 ND<5 ND<0.5	ND<1 ND<5 0.6								
L-3	11/03/90 02/13/91	ND<1 ND<1	ND<1 ND<1	ND<1 ND<1	NA NA	ND<1 ND<1									
L-4	11/13/90 02/13/91 12/06/93 11/03/94	ND<1 ND<1 ND<5 1.7	ND<1 ND<1 ND<5 ND<0.5	ND<1 ND<5 ND<0.5 ND<0.5	1 NA NA 2.5	ND<1 ND<5 ND<0.5 ND<0.5									
L-5	11/21/90(DUP) 11/03/90 02/13/91 12/06/93 12/06/93 11/03/94	ND<0.5 2 ND<1 ND<1 ND<5 ND<0.5 ND<0.5	ND<1 ND<1 ND<5 ND<1 ND<1 ND<0.5	ND<1 ND<1 ND<5 NA NA ND<0.5	2.5 ND<0.5 ND<0.5 NA NA ND<0.5	ND<1 ND<1 ND<5 ND<1 ND<1 ND<0.5									
L-6	11/03/94	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
L-7	11/03/94 11/03/94(DUP)	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	
L-8	11/03/94	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
L-9	11/03/94	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
L-10	11/03/94	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
L-11	11/03/94 11/03/94(DUP)	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5	ND<0.5 ND<0.5
L-12	11/03/94	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5

NOTES
 (1) ND denotes Not Detected at detection limit indicated (where available)
 (2) NA denotes Not Analyzed

TABLE D-5

OTHER ORGANIC COMPOUNDS IN PORE WATER SAMPLES
 CAMP ROBERTS LANDFILL
 (All units in ug/l - parts per billion)

LYSIMETER NO.	DATE	ACETONE	2-BUTANONE	CARBON DISULFIDE	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLEMES
LS-1	02/13/91	ND<20 ⁽¹⁾	134	ND<1	ND<1	1.3	7.3	41
	12/06/93	ND<10	ND<10	ND<5	ND<2	ND<2	ND<2	7
	11/03/94	NA ⁽²⁾	NA	NA	ND<0.5	ND<0.5	1.5	7.8
LS-2	02/13/91	ND<20	780	ND<1	ND<1	ND<1	4.7	28
	12/06/93	ND<10	ND<10	ND<5	ND<2	ND<2	ND<2	ND<2
	11/03/94	NA	NA	NA	ND<0.5	ND<0.5	ND<0.5	ND<0.5
LS-3	11/15/90	ND<20	ND<10	1.5	ND<1	ND<1	ND<1	ND<1
	02/13/91	ND<20	ND<10	ND<1	ND<1	ND<1	ND<1	1
LS-4	11/15/90	61	ND<10	1.3	ND<1	ND<1	ND<1	3.9
	02/13/91	ND<20	ND<10	3.6	ND<1	ND<1	ND<1	3
	12/06/93	ND<10	ND<10	ND<5	ND<2	ND<2	ND<2	ND<2
	11/03/94	NA	NA	NA	0.7	ND<0.5	ND<0.5	ND<0.5
	11/03/94(DUP)	NA	NA	NA	0.7	ND<0.5	ND<0.5	ND<0.5
LS-5	11/15/90	71	1,190	ND<1	ND<1	1.5	10	56
	02/13/91	ND<20	940	ND<1	ND<1	ND<1	4.6	26
	12/06/93	ND<10	ND<10	ND<5	ND<2	ND<2	ND<2	ND<2
	11/03/94	NA	NA	NA	ND<0.5	ND<0.5	ND<0.5	ND<0.5
LS-6	11/02/94	NA	NA	NA	ND<0.5	ND<0.5	ND<0.5	ND<0.5
LS-7	11/02/94	NA	NA	NA	ND<0.5	ND<0.5	ND<0.5	ND<0.5
LS-7	11/02/94(DUP)	NA	NA	NA	ND<0.5	ND<0.5	ND<0.5	ND<0.5
LS-8	11/02/94	NA	NA	NA	0.7	0.8	ND<0.5	1
LS-10	11/02/94	NA	NA	NA	ND<0.5	ND<0.5	ND<0.5	ND<0.5
LS-11	11/03/94	NA	NA	NA	ND<0.5	ND<0.5	ND<0.5	0.7
LS-11	11/03/94(DUP)	NA	NA	NA	ND<0.5	ND<0.5	ND<0.5	0.6
LS-12	11/18/94	NA	NA	NA	ND<0.5	ND<0.5	ND<0.5	ND<0.5

NOTES: (1) ND denotes not detected at detection limit indicated (where available).
 (2) NA denotes not analyzed.

TABLE D-6

PRIORITY POLLUTANT METALS IN PORE WATER SAMPLES
CAMP ROBERTS LANDFILL
(All units in mg/l - parts per million)

LYSIMETER NO.	DATE	ALUMINUM	ARSENIC	BARIUM	TOTAL CHROMIUM	COBALT	COPPER	LEAD	MOLYBDENUM	NICKEL	VANADIUM	ZINC
LS-1	2/13/91	0.15	ND<0.005 ⁽¹⁾	0.222	0.056	ND<0.01	0.13	0.02	0.03	0.07	0.03	0.62
LS-2	2/13/91	0.15	0.008	0.026	0.251	0.01	0.05	0.01	0.11	0.3	0.17	0.35
LS-3	11/15/90	3.8	0.005	0.634	0.007	ND<0.01	ND<0.01	0.003	ND<0.01	0.08	0.06	0.27
LS-4	2/13/91	0.08	0.014	0.948	ND<0.005	ND<0.01	ND<0.01	ND<0.002	ND<0.01	0.04	0.02	0.14
LS-5	11/15/90 2/13/91	6.96 0.67	0.005 ND<0.005	0.164 0.392	5.03 0.264	0.23 ND<0.01	6.17 0.23	0.635 0.047	0.52 0.03	5.85 0.17	0.36 0.1	16.5 0.63

NOTE: (1) ND denotes Not Detected at detection limit indicated.

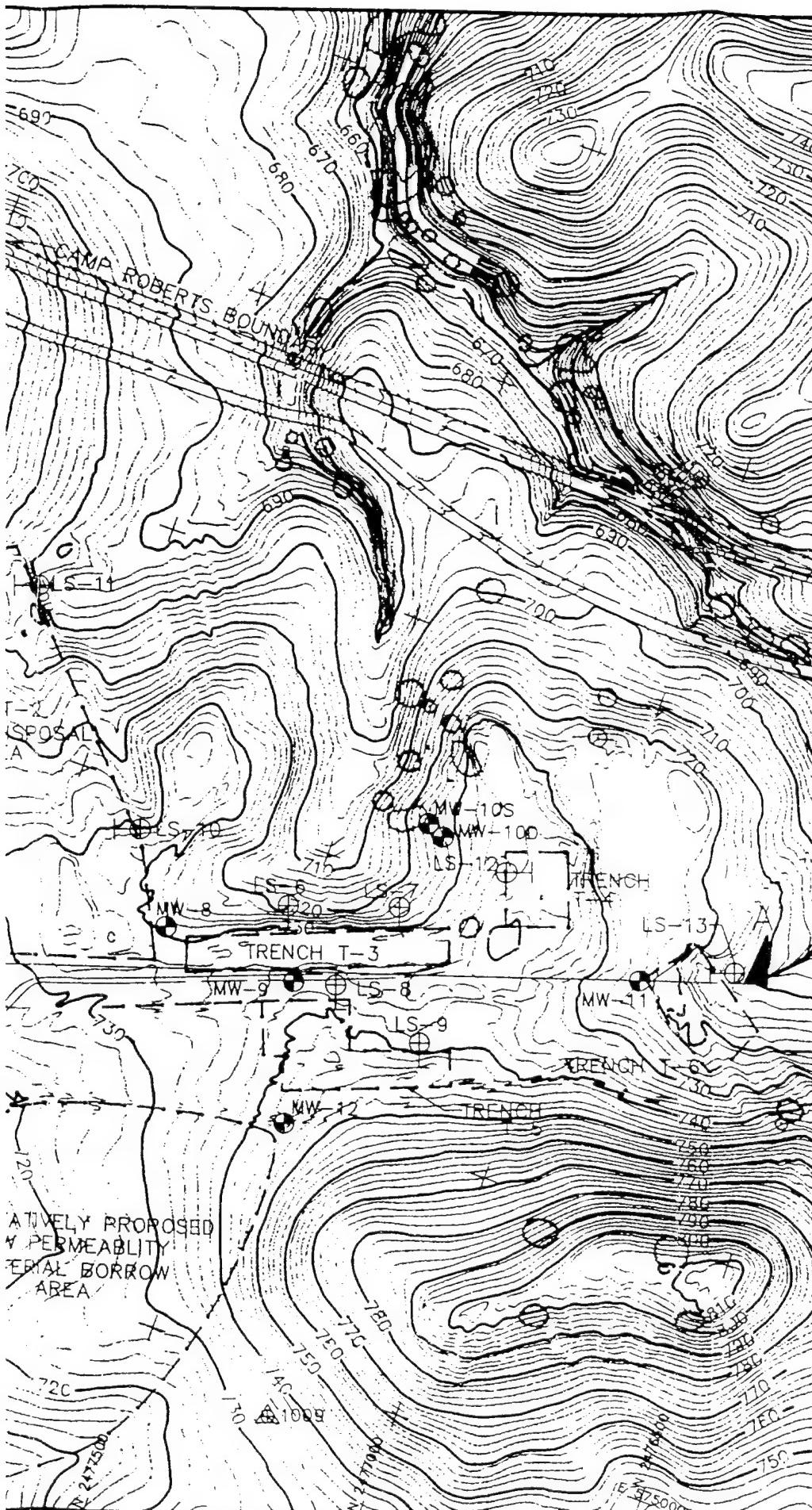
TABLE D-7

GENERAL MINERALS AND OTHER PARAMETERS IN FOREWATER SAMPLES
CAMP ROBERT'S LANDFILL
(All units in mg/l - parts per million)

LYSIMETER NO.	DATE	TOTAL ALKALINITY	CHLORIDE	TOTAL HARDNESS	NITRATE	SULFATE	TOTAL DISSOLVED SOLIDS	TOTAL ORGANIC CARBON	BORON	CALCIUM	IRON	MAGNESIUM	MANGANESE	SODIUM	KALIUM	ORTHO- PHOSPHATE	
1.5-1	02/13/91	NA ⁽¹⁾	NA	322	NA	NA	8.3	0.25	86.7	0.2	23.8	0.029	31.1	4	NA		
1.5-2	02/13/91	160	130	150	NA	NA	160	700	6.1	0.86	40.9	0.038	11.7	0.169	171	ND<2 ⁽²⁾	
1.5-3	11/1/90	NA	NA	NA	NA	NA	NA	NA	0.23	87.6	2.3	33.1	0.073	47.8	3	NA	
1.5-4	02/13/91	NA	NA	NA	NA	NA	NA	NA	0.14	119	0.32	40.9	2.69	73.9	ND<2	NA	
1.5-5	11/1/90	NA	NA	NA	NA	NA	NA	NA	0.12	74.7	19.6	42.8	0.96	51.3	6	NA	
	02/13/91			150	406	NA	32	710	3.6	0.11	88.9	1.04	44.7	0.034	58.4	ND<2	NA

NOTES: (1) NA denotes Not Analyzed.
(2) ND denotes Not Detected at detection limit indicated.

DRAWN BY D.J.C. CHECKED BY Boaz L. 2-15-95 DWG. NO. 92488-003
12/05/94 APPROVED BY P.H.L. 2-14-95 FILE NAME FILAREA



LEGEND

- ▲ GROUND CONTROL STATION
- ▲ GAS MONITORING PROBE
- PAVED ROAD
- - - UNPAVED ROAD
- MONITORING WELL
- LYSIMETER
- A A' GEOLOGIC CROSS SECTION (SEE FIGURE 8)

REFERENCE

BASE MAP AFTER AERO-GEODETIC CORP. JOB NO. 935192. DATE OF PHOTOGRAPHY 12-29-93. ORIGINAL SCALE 1" = 100 FEET. 2 FT. CONTOUR INTERVAL. BOUNDARIES OF PERMITTED AREA BASED ON "SANITARY FILL AREA," TOPOGRAPHIC MAP DATED FEBRUARY 1987. BOUNDARIES OF INACTIVE TRENCH FILLS T-1/T-2 THROUGH T-6 BASED ON GEOSYSTEM FIELD INVESTIGATION.

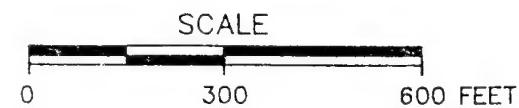


FIGURE D-1

LANDFILL AREA

CAMP ROBERTS, CALIFORNIA

GEOSYSTEM
Consultants, Inc.

**DATA AND REPORT SUMMARY FROM
TANK 936 GEOSYSTEM SITE REPORT
*APPENDIX E***

E

***DATA AND REPORT SUMMARY FROM TANK 936 GEOSYSTEM SITE
REPORT***

Source: GEOSYSTEM Consultants, Inc. 1994. Evaluation of Remediation System Tank Site 936, Camp Roberts, California. Prepared for the State of California, Division of the State Architect, under Agreement No. CS 6919 #5, Work Order No. MAR 720.01.

TABLE E-1

**SUMMARY OF SOIL SAMPLE ANALYSES
VAPOR EXTRACTION AND AIR SPARGE WELL BORINGS**
(All units are mg/kg - parts per million)

WELL/ BORING NO._	SAMPLE DEPTH (feet)	DATE SAMPLED	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLEMES	TPH-F ^a	
							TPH-F ^b	TPH-F ^c
V-1	30	09/29/93	0.059	0.88	0.3	1.6	9.1	ND<5
V-2	15	09/29/93	15	110	76	300	3,000	3,900
	30	09/29/93	11	140	78	310	3,300	3,900
V-3	10	09/29/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	ND<5
	20	09/29/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	ND<5
	30	09/29/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	ND<5
V-4	30	09/28/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	ND<5
V-5	30	09/27/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	ND<5
V-6	30	09/28/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	ND<5
V-7	30	09/28/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	ND<5
V-8	31	09/23/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	ND<5
V-9	30	09/29/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	ND<5
V-10	30	09/29/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	ND<5
V-11	31	09/22/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	ND<5
V-12	31	09/21/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	ND<5
V-13	31	09/21/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	ND<5
V-14	31	09/22/93	ND<0.005	0.0094	0.0055	0.016	ND<1	ND<5
V-15	30	09/21/93	0.015	0.011	0.0082	0.023	ND<1	

TABLE E-1
(Continued)

WELL/ BORING NO._	SAMPLE DEPTH (feet)	DATE SAMPLED	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLEMES	TPH- δ^{40}	TPH- δ^{40}
V-16	6	09/21/93	ND<0.005	0.0073	0.008	0.0023	1.5	270
	30	09/21/93	ND<0.005	0.0063	ND<0.005	0.0063	ND<1	ND<5
V-17	30	09/20/93	ND<0.005	ND<0.005	ND<0.005	0.0085	ND<1	ND<5
	31	09/24/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	ND<5
S-3	10	09/27/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	23
	20	09/27/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	51
	30	09/27/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	ND<5
S-4	30	09/28/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	ND<5
S-5	11	09/24/93	0.011	ND<0.005	0.0061	0.024	ND<100	ND<100
	30	09/24/93	0.88	0.89	5.2	9.3	170	4,800
S-6	30	09/27/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	ND<5
S-7	30	09/28/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	ND<5
S-8	31	09/23/93	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	ND<5
S-9	31	09/22/93	0.022	0.016	0.013	0.037	ND<1	ND<5
S-10	30	09/21/93	0.0097	0.010	0.0076	0.021	ND<1	ND<5
S-11	11	09/20/93	ND<0.005	ND<0.005	0.10	0.22	75	4,000
	16	09/20/93	ND<0.005	ND<0.005	0.24	0.44	71	3,600
	30	09/20/93	ND<0.005	ND<0.0052	ND<0.005	0.0053	ND<1	8

NOTES: (1) Total petroleum hydrocarbons as gasoline using EPA Method 5030/8015 modified (purge and trap).

(2) Total petroleum hydrocarbons as diesel using EPA Method 8015.

TABLE E-2
SUMMARY OF GROUND WATER QUALITY DATA
AIR SPARGE WELLS
SEPTEMBER 29, 1993
(All units are mg/l - parts per million)

<u>WELL NO.</u>	<u>TPH-g⁽¹⁾</u>	<u>BENZENE</u>	<u>TOLUENE</u>	<u>ETHYL BENZENE</u>	<u>TOTAL XYLENES</u>
S-1	72	26	5.5	4.4	1.7
S-2	210	31	37	7.8	38
S-3	150	17	34	6.1	31
S-4	75	4.8	11	4.2	19
S-5	48	15	5.6	3.2	11
S-6	97	13	17	3.9	19
S-7	18	2.9	0.58	1.1	1.6
S-8	39	18	0.29	3.8	4.2
S-9	6.3	3.0	0.24	1.5	0.46
S-10	4.2	1.9	0.19	0.053	0.35
S-11	1.4	1.1	0.032	0.0087	0.05

NOTES: (1) Total petroleum hydrocarbons as gasoline using EPA Method 5030/8015-modified (purge and trap).

TABLE E-3
GROUND WATER QUALITY CHANGES WITH TIME
 (All units in mg/l - parts per million)

<u>WELL NO.</u>	<u>DATE SAMPLED</u>	<u>BENZENE</u>	<u>TOLUENE</u>	<u>ETHYL BENZENE</u>	<u>TOTAL XYLEMES</u>	<u>TPH-R⁽¹⁾</u>	<u>TPH-d⁽²⁾</u>
MW-1	05/23/91	4.8	13.0	2.1	15.0	57.0	NA ⁽³⁾
	06/04/92	5.0	11.0	2.0	31.0	140.0	NA
	03/10/93	1.6	3.9	2.2	9.9	68.0	ND<2 ⁽⁴⁾
	05/28/93	10.0	19.0	3.9	23.0	97.0	ND<0.5
	Geometric Mean ⁽⁵⁾	4.4	10.1	2.5	18.0	85.2	--
	06/06/94	0.52	0.11	ND<0.006	1.4	4.6	NA
	08/31/94	3.1	3.9	0.47	4.1	28	NA
	09/16/94	1.7	3.5	0.19	2.4	21	NA
	Reduction ⁽⁶⁾	62%	66%	92%	87%	75%	--
		3.8	2.1	1.1	5.4	36	
MW-2	05/23/91	8.3	27.0	4.8	37.0	66.0	NA
	06/04/92	9.0	16.0	5.0	47.0	207.0	NA
	03/10/93	9.4	18.0	2.8	17.0	120	ND<2
	05/28/93	20.0	38.0	5.6	32.0	140	ND<0.5
	Geometric Mean	10.9	23.3	4.4	31.2	123	--
	06/06/94	3.4	4.5	0.16	8.3	31	NA
	08/31/94	5.4	9.2	0.98	11.0	76	NA
	09/16/94	4.1	7.6	1.9	13.0	47	NA
	Reduction	62%	67%	57%	58%	62%	--
		5.9	14	2.5	15	78	
MW-3	05/23/91	12.0	42.0	3.8	31.0	160.0	NA
	06/04/92	10.0	23.0	6.0	57.0	270.0	NA
	03/10/93	8.8	25.0	4.1	22.0	140	ND<2
	05/28/93	11.0	32.0	3.7	23.0	120	ND<0.5
	Geometric Mean	10.4	29.6	4.3	30.8	164	--
	06/06/94	2.3	4.3	0.19	12.0	34	NA
	08/31/94	4.5	19.0	1.9	15.0	100	NA
	09/16/94	5.9	20.0	2.8	18.0	100	NA
	Reduction	43%	33%	35%	41%	39%	--
		4.6	14	2.0	16.0	77	
MW-4	06/04/92	0.2	0.4	0.2	0.2	4.1	NA
	03/09/93	3.2	0.75	0.94	2.0	32	ND<2
	05/28/93	0.79	0.14	0.005	0.031	0.7	ND<0.5
	Geometric Mean	0.80	0.35	0.098	0.231	4.5	--
	08/31/94	0.069	0.0071	0.025	0.027	2.1	NA
	08/31/94 ⁽⁷⁾	0.060	0.0057	0.023	0.024	2.4	NA
	09/16/94	0.064	0.0094	0.027	0.028	1.1	NA
	Reduction	92%	97%	72%	88%	76%	--
		0.035	0.004	0.0096	0.010	2.3	

TABLE E-3
(Continued)

<u>WELL NO.</u>	<u>DATE SAMPLED</u>	<u>BENZENE</u>	<u>TOLUENE</u>	<u>ETHYL BENZENE</u>	<u>TOTAL XYLEMES</u>	<u>TPH-g⁽¹⁾</u>	<u>TPH-d⁽²⁾</u>
MW-6	06/05/92	5.5	10.0	3.7	15.8	82.5	NA
	03/10/93	0.6	0.11	0.74	1.0	27	ND<2
	05/28/93	9.5	1.8	1.8	4.2	26	ND<0.5
	Geometric Mean	3.2	1.26	1.70	4.0	38.7	--
	06/06/94	6.8	0.29	1.6	2.2	28	NA
	08/31/94	8.0	0.72	1.8	3.6	42.0	NA
	09/16/94	13.0	0.92	3.0	7.9	37.0	NA
	09/16/94(FD) ⁽⁸⁾	10.0	0.88	2.8	6.7	46.0	NA
	Reduction	-217% ⁽⁹⁾	30%	-65% ⁽⁵⁾	-65%	-19%	--
		8.5	0.310	2.2	3.3	32.0	
MW-13	09/18/92	1.2	ND<0.005	0.19	0.0079	1.5	NA
	01/29/93	4.2	0.013	1.1	0.13	10.0	2.3
	03/09/93	1.9	0.034	ND<0.025	0.081	6.1	2.2 ⁽¹⁰⁾
	05/28/93	9.3	0.37	1.0	0.78	20.0	5.0
	Geometric Mean	3.1	0.030	0.27	0.09	6.5	--
	08/31/94	0.32	ND<0.002	0.036	0.0046	0.76	NA
	09/16/94	0.70	0.008	0.140	0.013	1.4	NA
	Reduction	77%	73%	48%	86%	78%	--
		0.15	ND<0.005	0.16	0.015	1.5	

NOTES: (1) TPH-g denotes total petroleum hydrocarbons as gasoline.

(2) TPH-d denotes total petroleum hydrocarbons as diesel.

(3) NA denotes Not Analyzed.

(4) ND denotes Not Detected at detection limit indicated.

(5) Geometric mean of concentrations prior to initiating remediation.

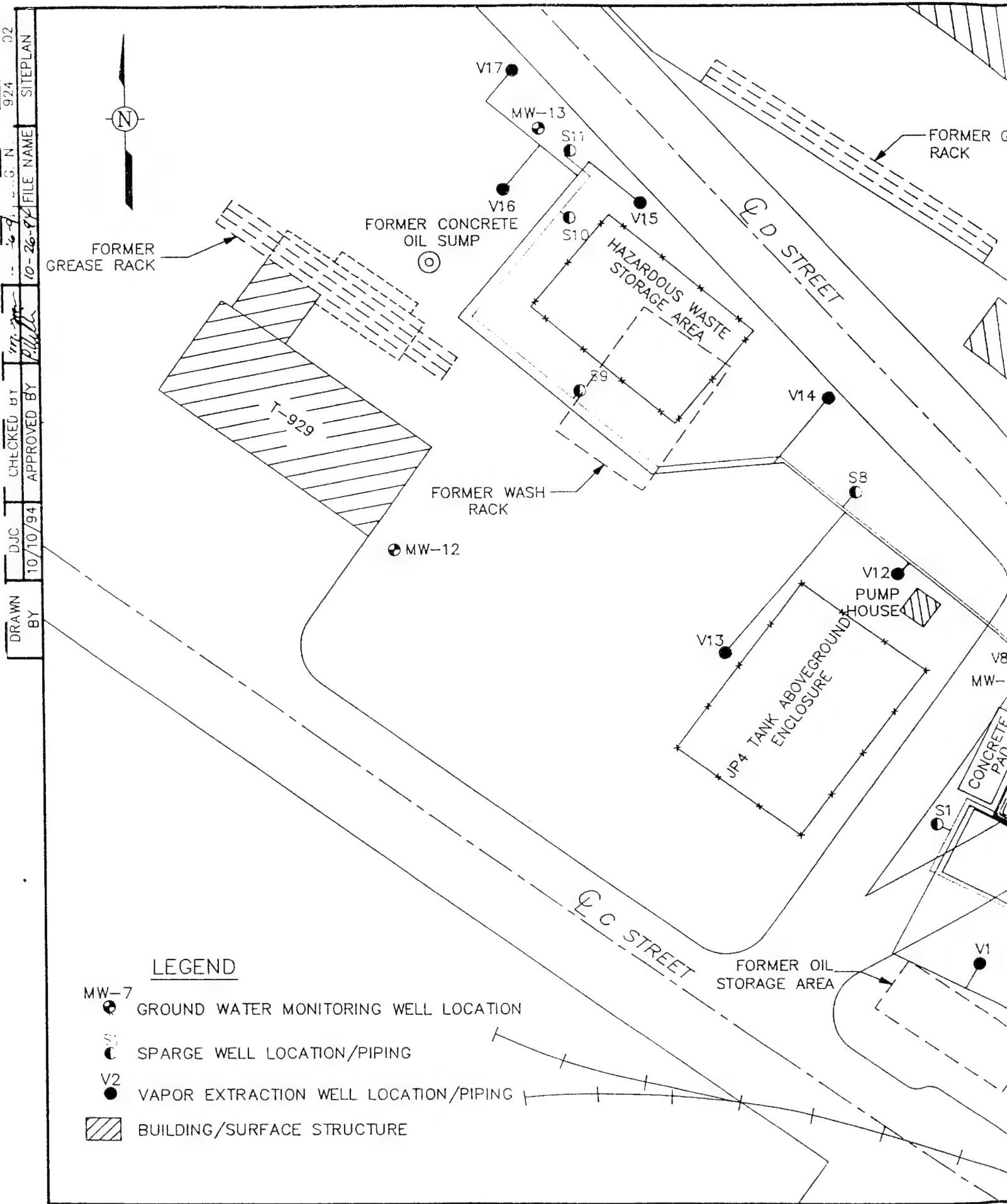
(6) Reduction based on most recent concentration versus geometric mean.

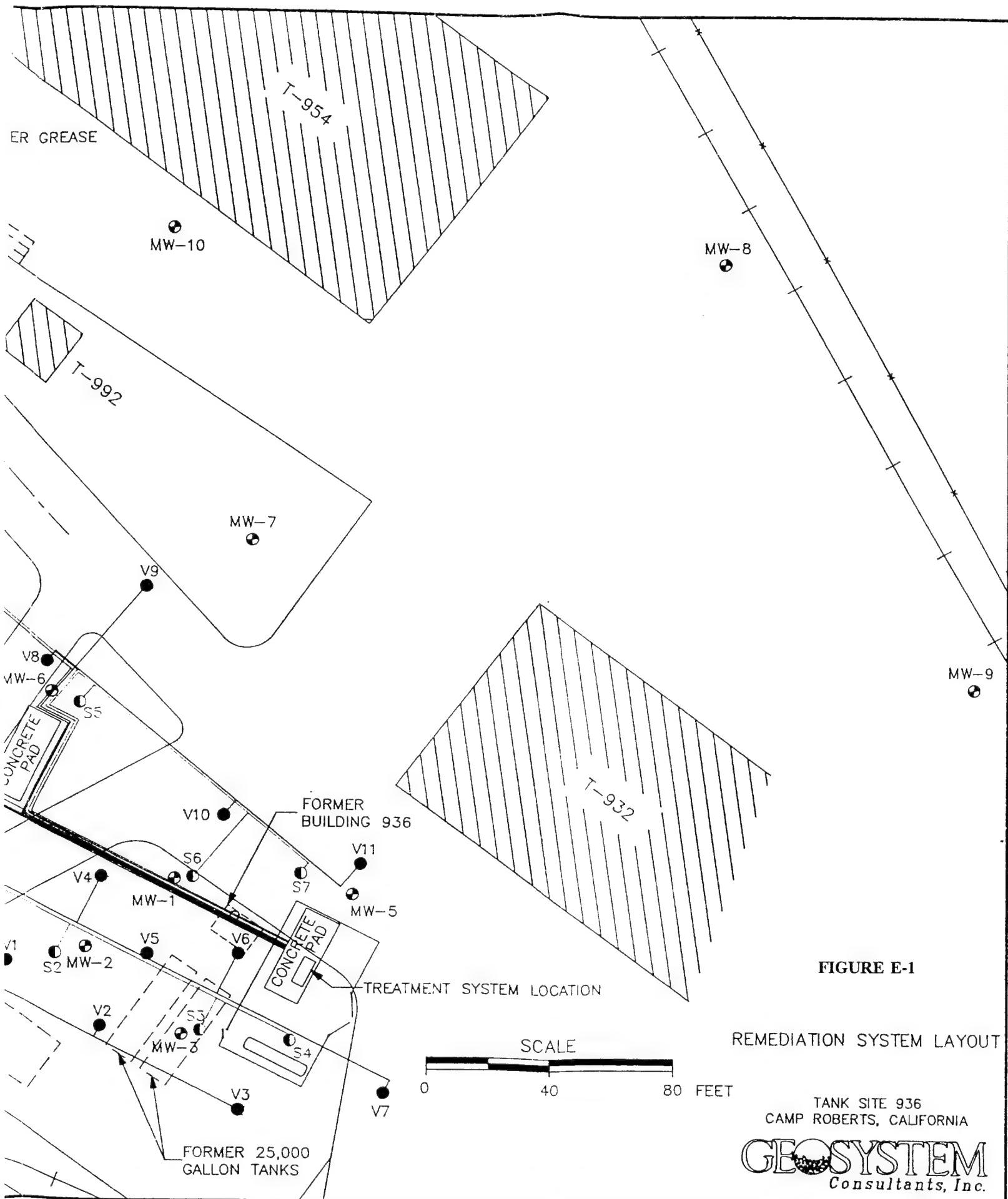
(7) Laboratory duplicate sample.

(8) Field duplicate sample.

(9) Minus sign indicates apparent increase in concentration.

(10) Hydrocarbons detected in the TPH-d range in the sample from Well MW-13 match the JP4 jet fuel pattern.





PHOTODOCUMENTATION LOG
Photographs Taken 29 November - 2 December 1994
APPENDIX F

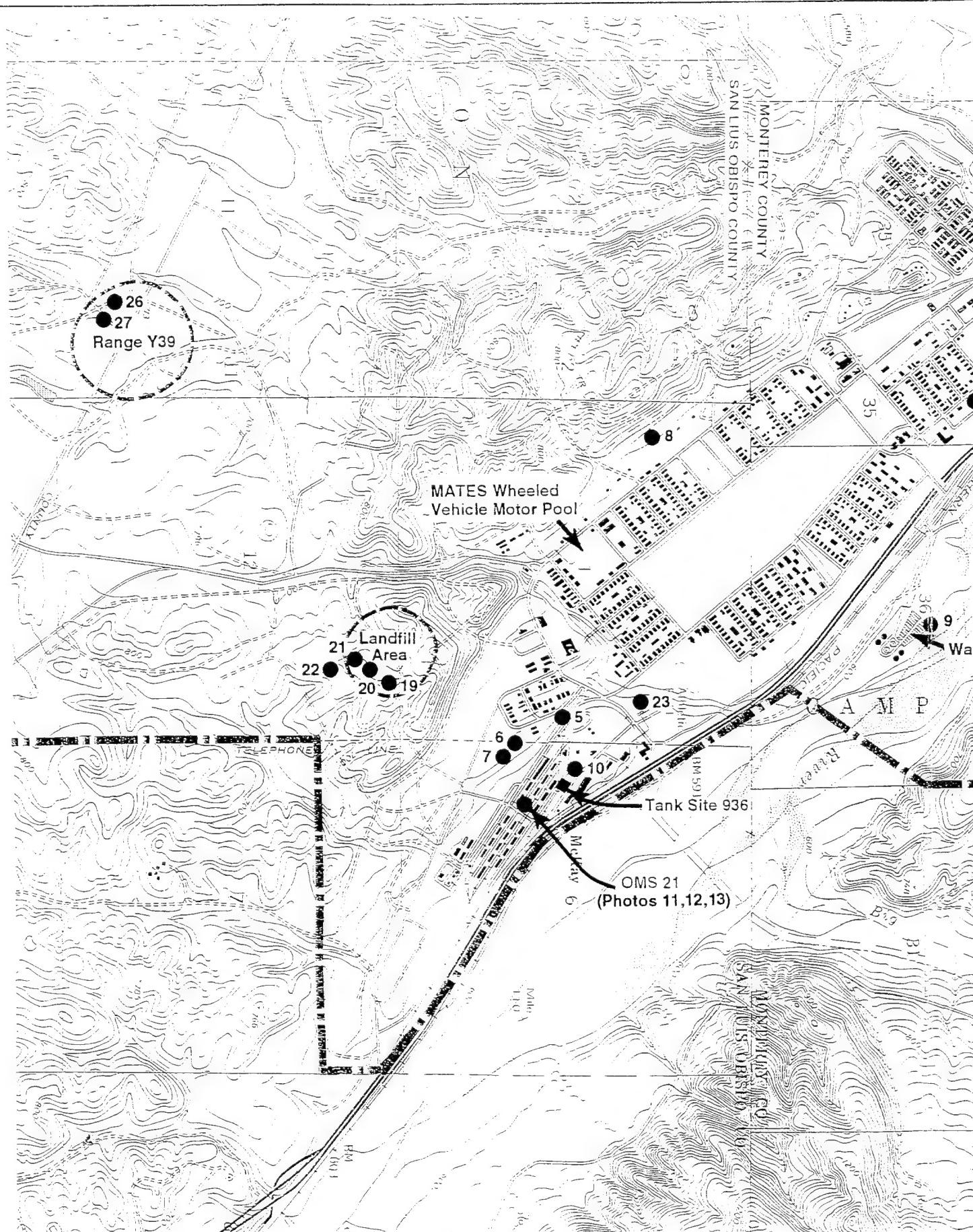
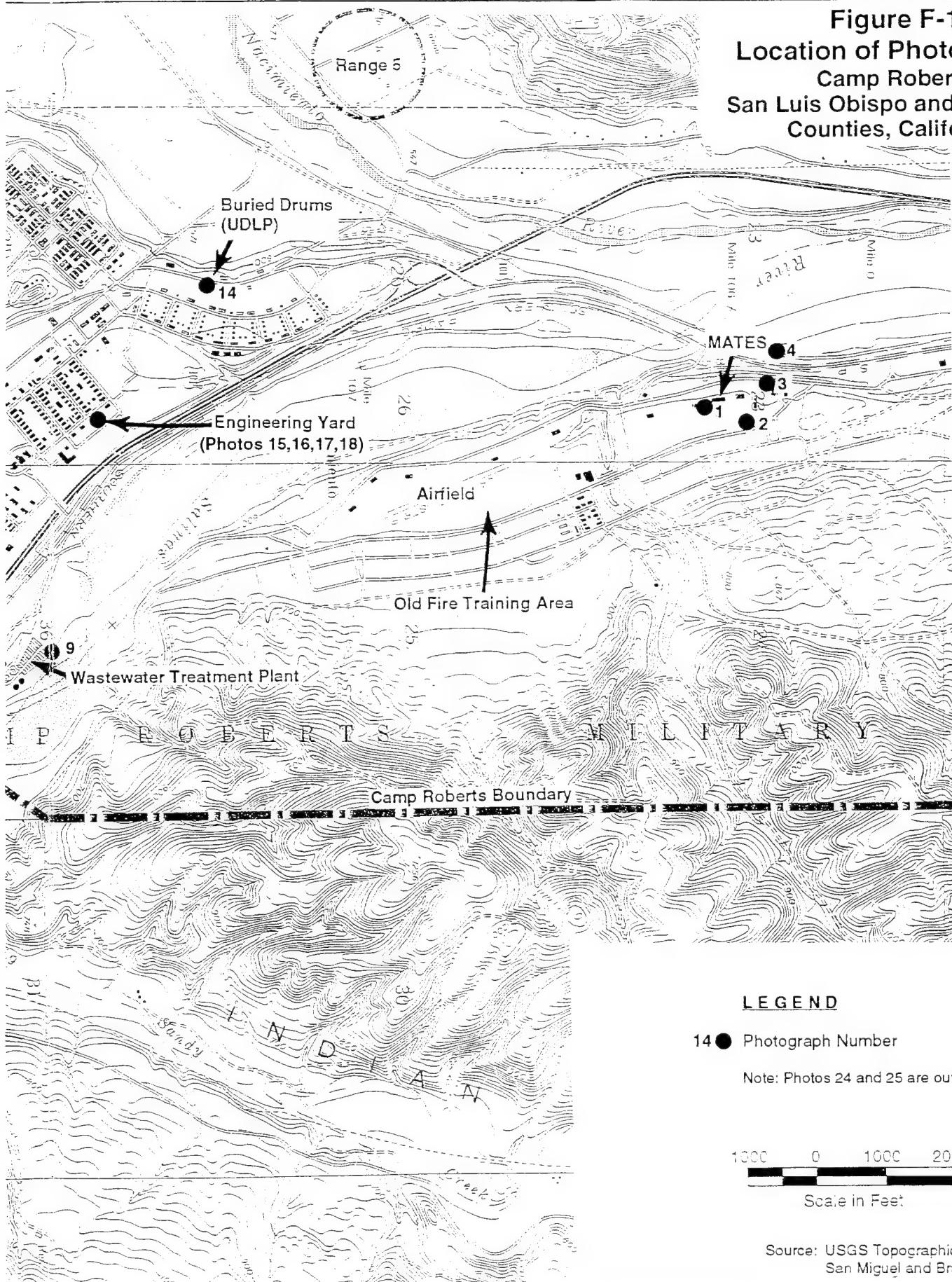


Figure F-1
Location of Photographs
Camp Roberts
San Luis Obispo and Monterey
Counties, California



LEGEND

14 ● Photograph Number

Note: Photos 24 and 25 are outside scope of map.

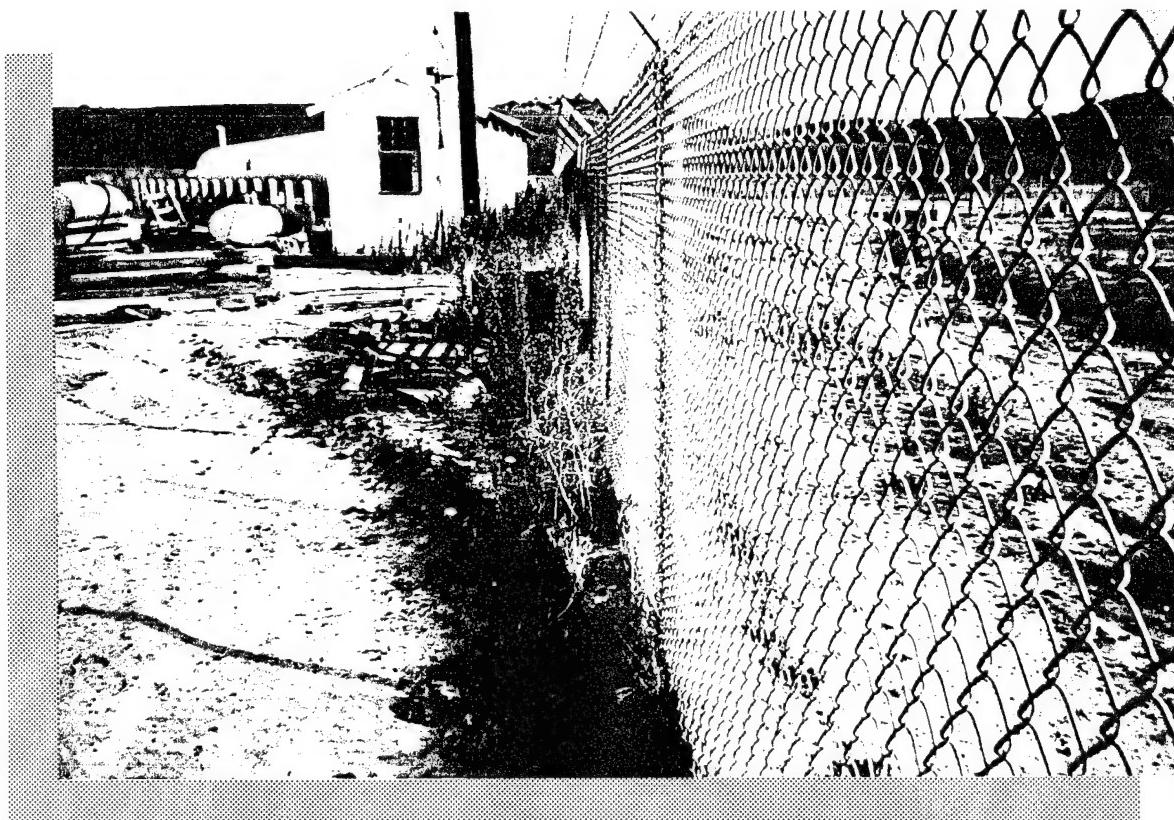
1300 0 1000 2000
Scale in Feet



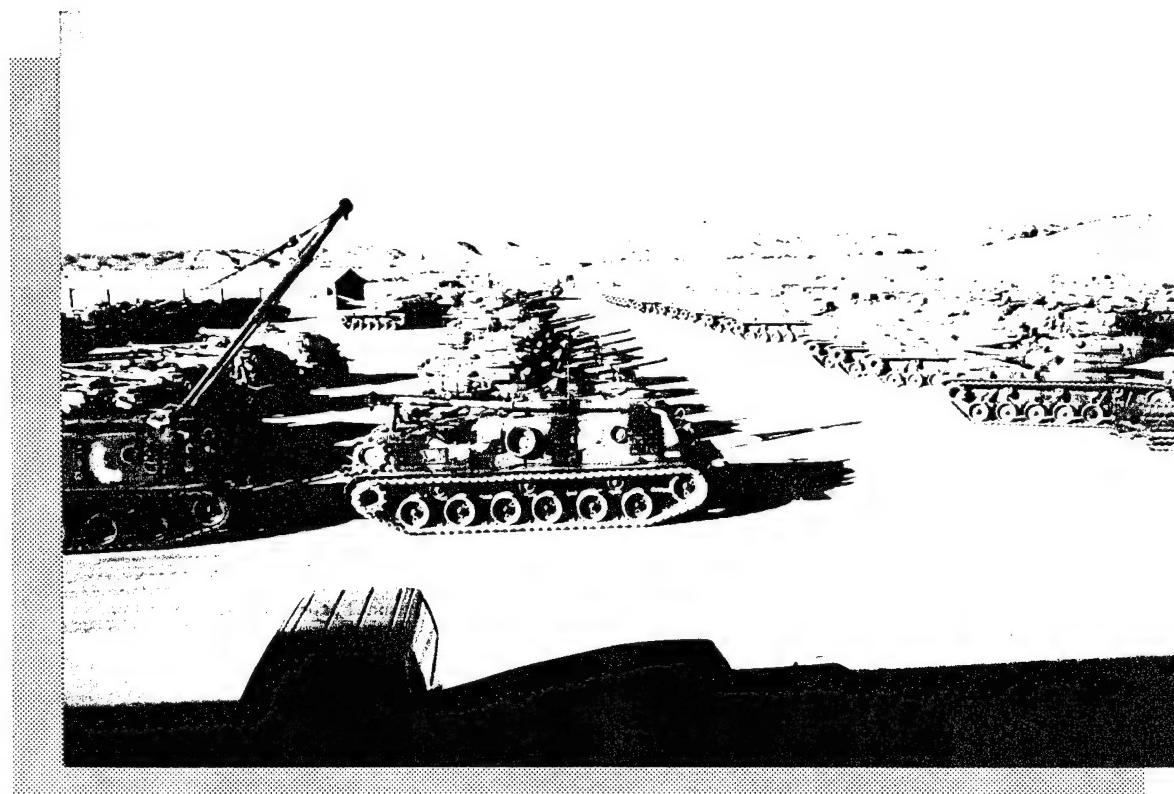
Source: USGS Topographic Quadrangles,
San Miguel and Bradley, California.

F

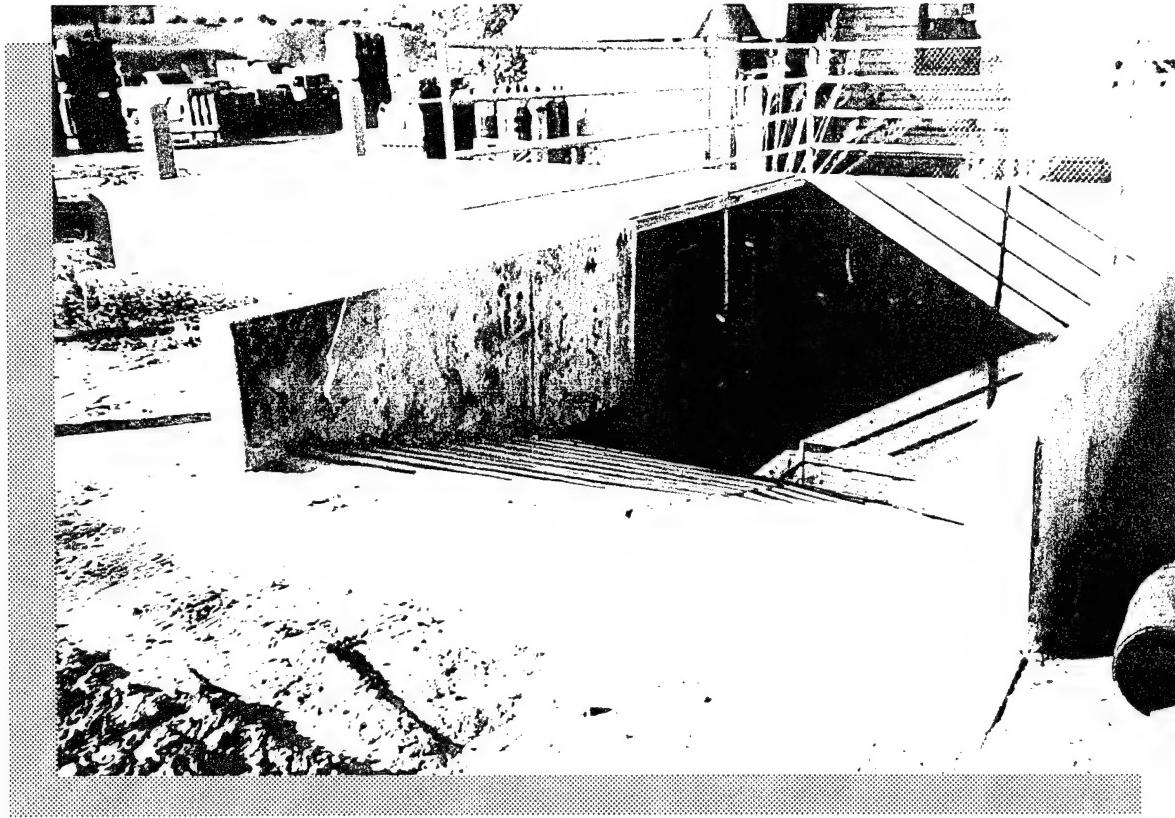
PHOTODOCUMENTATION LOG



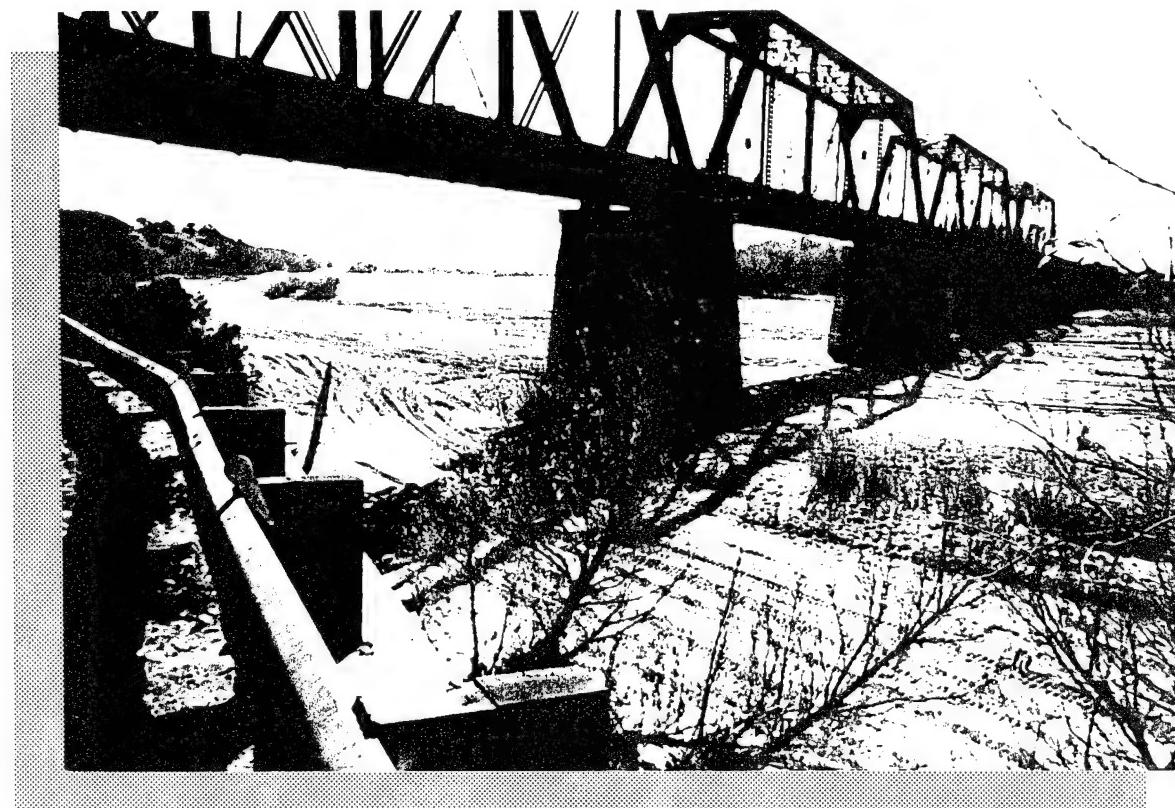
Photograph 1: Old Battery Maintenance Area, located 150m ESE of Bldg. 25012. Neutralized battery acid discharged to culvert seen in right side of picture.



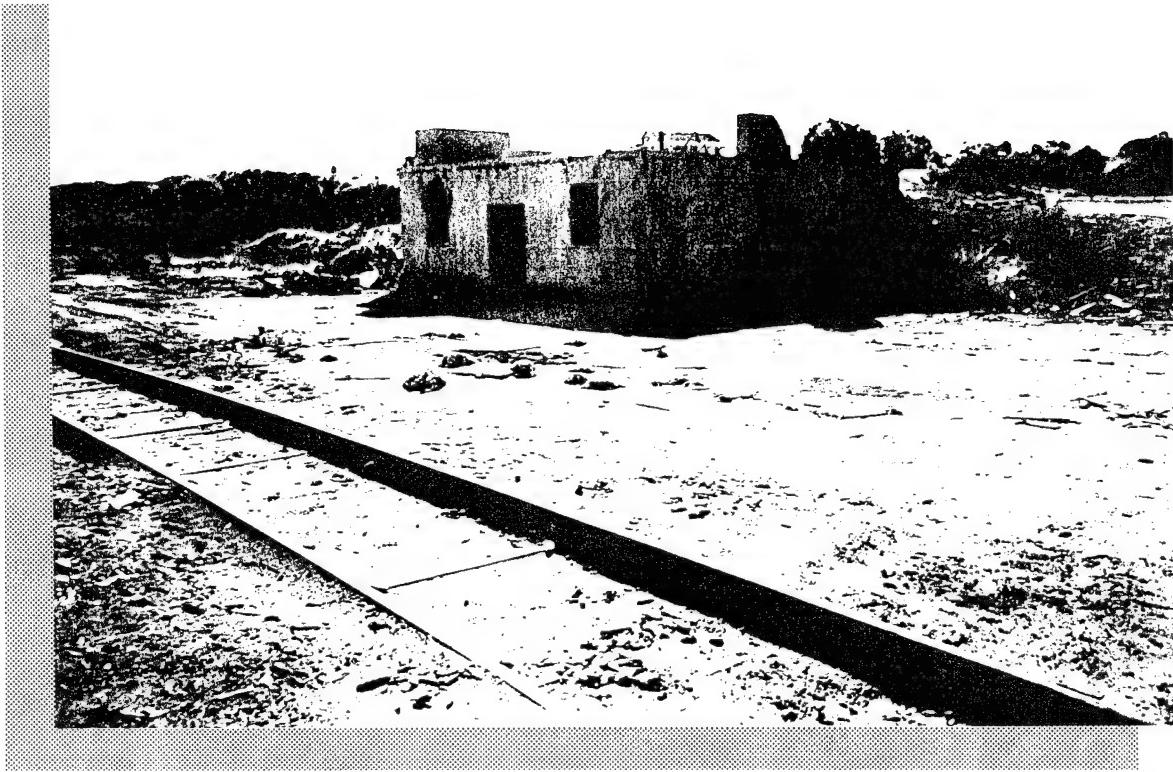
Photograph 2: MATES Vehicle Staging Area.



Photograph 3: MATES Oil/Water Separator.



Photograph 4: The Salinas River looking south.



Photograph 5: Old Incinerator, Bldg. 927. Never in use.



Photograph 6: Looking across possible UXO site above Bldg. 927.



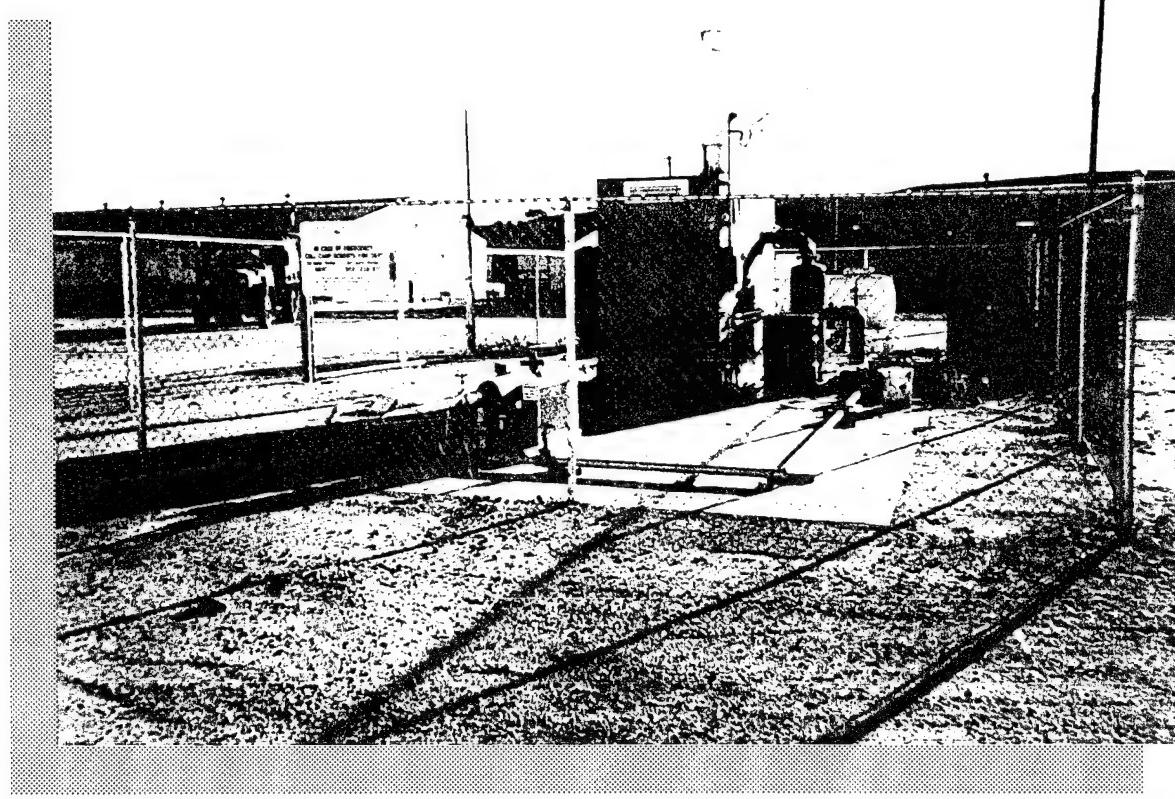
Photograph 7: Possible UXO in field above Bldg. 927.



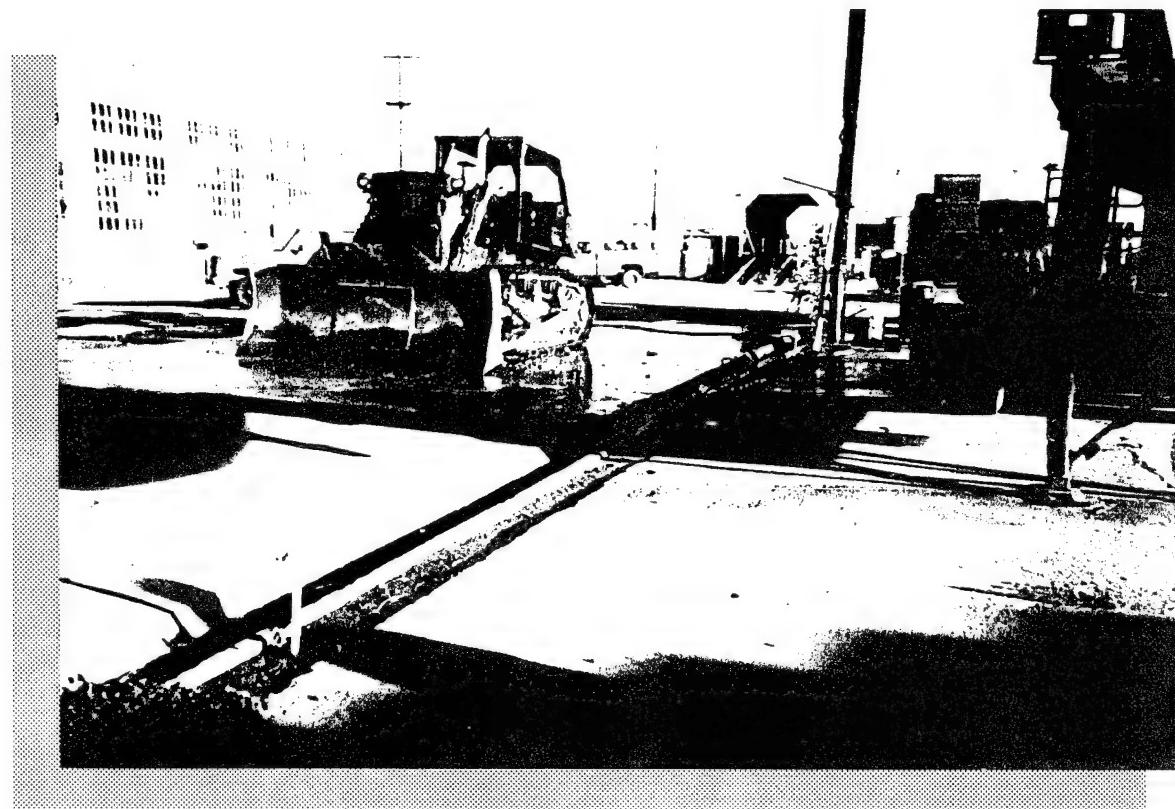
Photograph 8: Small Arms Range south of Washington Blvd.



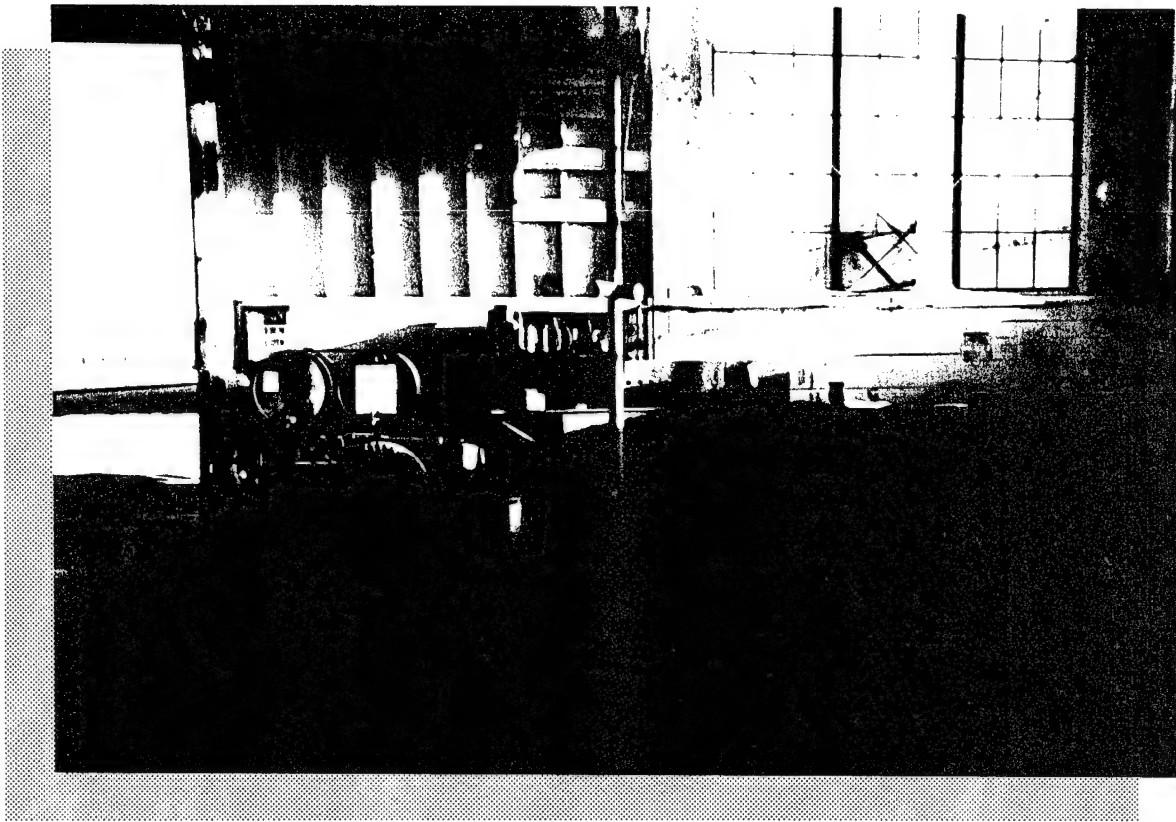
Photograph 9: Waste Water Treatment Plant (center of photo). Main Garrison Cantonment Area in background.



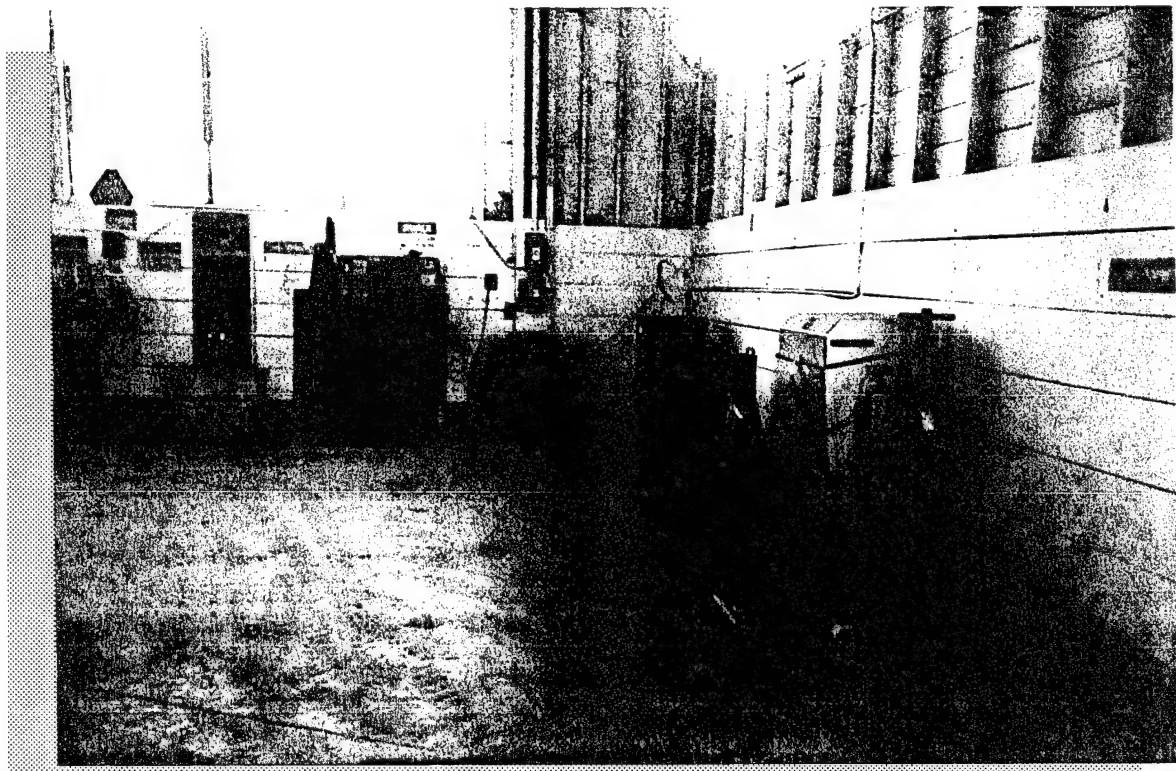
Photograph 10: Vapor Extraction/Air Sparge System at Tank Site 936.



Photograph 11: OMS-21 Wash Rack.



Photograph 12: Maintenance bays inside OMS-21.



Photograph 13: Maintenance bays inside OMS-21.



Photograph 14: UDLP Hazardous Wastes/Materials Storage Area. Buried waste drum area to far right of photo.



Photograph 15: Old/New PCB Transformers, north of Bldg. 6418.



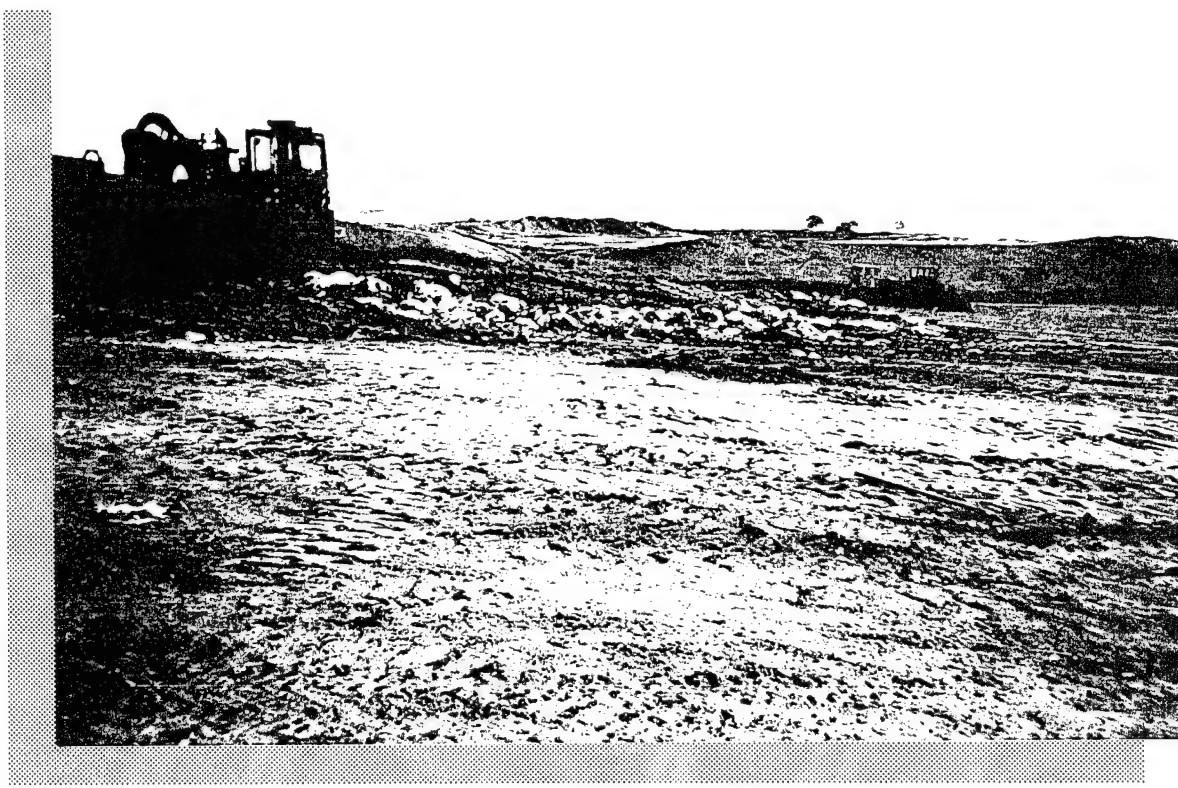
Photograph 16: Old/New PCB Transformers, north of Bldg. 6418.



Photograph 17: Hazardous Waste Storage Container and Old Pesticide Storage Area, Engineering Yard.



Photograph 18: Old asbestos (assumed) covered water tanks, Engineering Yard.



Photograph 19: NE corner of active landfill looking south.



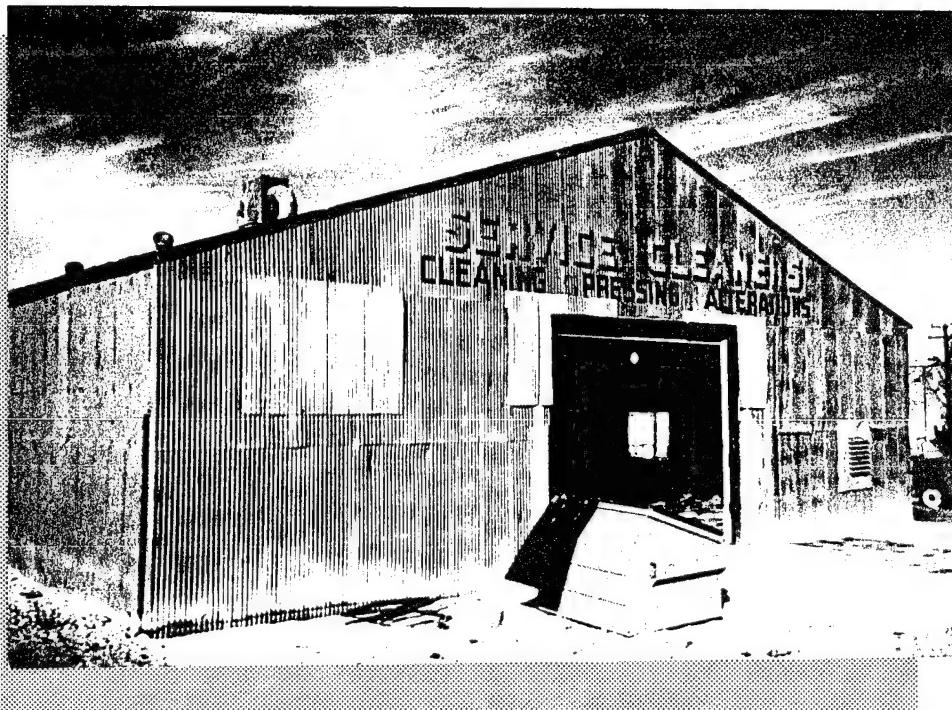
Photograph 20: Inactive portion of landfill looking west.



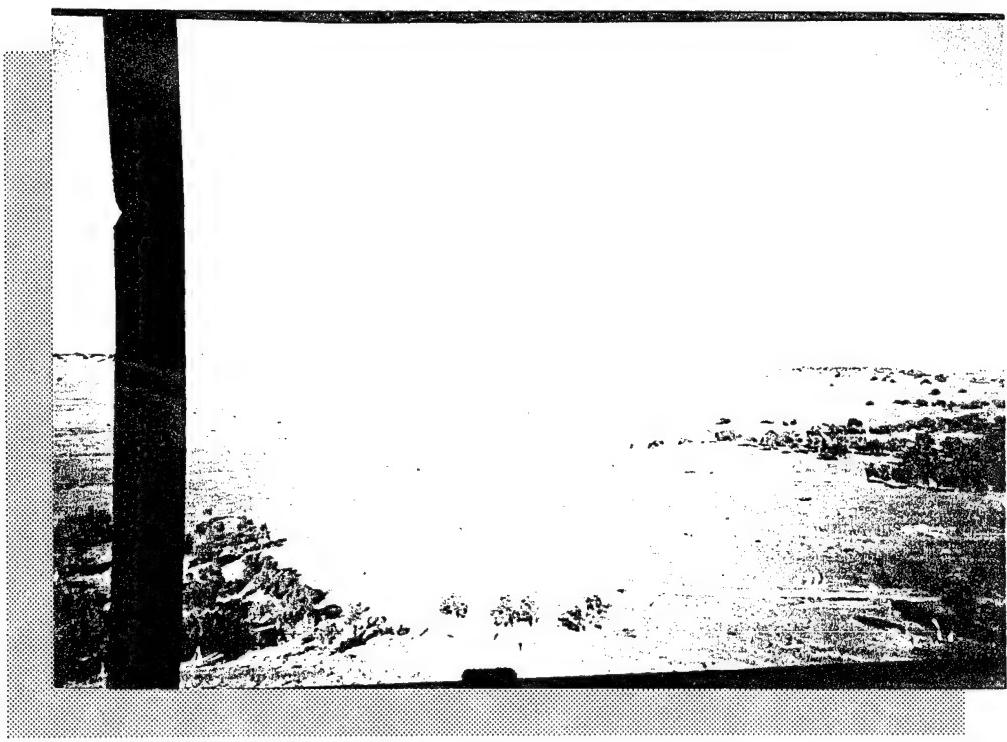
Photograph 21: North end of WWII landfill trenches looking south.



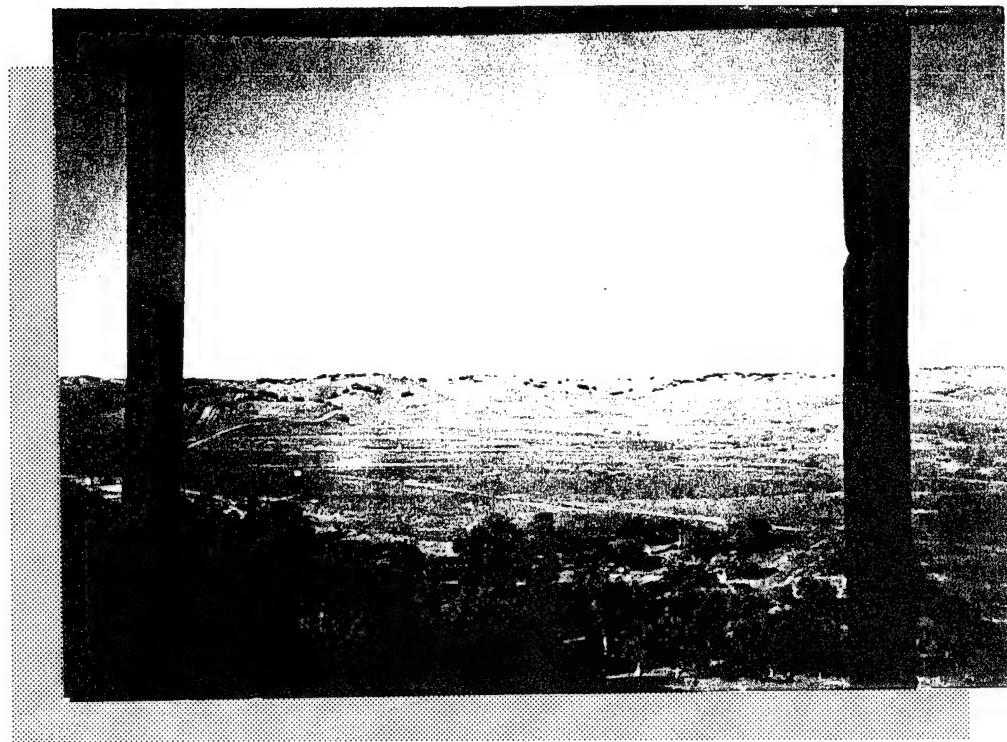
Photograph 22: South end of WWII landfill trenches looking north.



Photograph 23: Old Dry Cleaning Building.



Photograph 24: Main Impact Area.



Photograph 25: Main Impact Area.



Photograph 26: Old EOD Area.



Photograph 27: Old EOD Area.

U.S. EPA PRELIMINARY ASSESSMENT FORM
APPENDIX G

EPA Potential Hazardous Waste Site Preliminary Assessment Form

Identification

State: CA CERCLIS Number: CA6211820760

CERCLIS Discovery Date: Not on the Federal Facilities Docket

1. General Site Information

Name: Camp Roberts	Street Address:				
City:	State: CA	Zip Code: 93451	County: Monterey, San Luis Obispo	Co. Code: 27, 40	Cong. Dist: 17, 22
Latitude: 35° 47' 53"	Longitude: 120° 44' 40"	Approximate Area of Site: 43.363 Acres		Status of Site: <input type="checkbox"/> Active <input type="checkbox"/> Not Specified <input type="checkbox"/> Inactive <input type="checkbox"/> NA (GW plume, etc.)	

2. Owner/Operator Information

Owner: California Military Department		Operator: California Army National Guard		
Street Address: P.O. Box 269101		Street Address P.O. Box 8104		
City: Sacramento		City: San Luis Obispo		
State: CA	Zip Code: - 95826	Telephone: (916) 854-3605	State: CA	Zip Code: 93403
Type of Ownership: <input type="checkbox"/> Private <input checked="" type="checkbox"/> Federal Agency Name <u>CA ARNG</u> <input type="checkbox"/> State <input type="checkbox"/> Indian		How Initially Identified: <input type="checkbox"/> Citizen Compliant <input type="checkbox"/> PA Petition <input type="checkbox"/> State/Local Program <input type="checkbox"/> RCRA/CERCLA Notification <input type="checkbox"/> County <input type="checkbox"/> Municipal <input type="checkbox"/> Not Specified <input type="checkbox"/> Other _____		
		<input type="checkbox"/> Federal Program <input type="checkbox"/> Incidental <input type="checkbox"/> Not Specified <input checked="" type="checkbox"/> Other <u>Federal Facilities Coordinator</u>		

3. Site Evaluator Information

Name of Evaluator: Larry Ward/Carol Snead	Agency/Organization: ERM, Inc.	Date Prepared: 24 March 1995
Street Address: 7926 Jones Branch Drive, Suite 210	City: McLean	State: VA
Name of EPA or State Agency Contact: Caroline Douglas, EPA Region IX	Street Address: 75 Hawthorne Street	
City: San Francisco	State: CA 94105	Telephone: (415) 744-2343

4. Site Disposition (for EPA use only)

Emergency Response/Removal Assessment Recommendations: <input type="checkbox"/> Yes <input type="checkbox"/> No Date: _____	CERCLIS Recommendation: <input type="checkbox"/> Higher Priority SI <input type="checkbox"/> Lower Priority SI <input type="checkbox"/> NFRAP <input type="checkbox"/> RCRA <input type="checkbox"/> Other _____ Date: _____	Signature: Name (typed): Position:
---	--	--

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EPA Potential Hazardous Waste Site
Preliminary Assessment Form - Page 2 of 4

CERCLIS Number: CA6211820760

5. General Site Characteristics

Predominant Land Uses Within 1 Mile of Site (check all that apply): <p> <input checked="" type="checkbox"/> Industrial <input checked="" type="checkbox"/> Agriculture <input type="checkbox"/> DOI <input checked="" type="checkbox"/> Commercial <input type="checkbox"/> Mining <input type="checkbox"/> Other Federal Facility <input checked="" type="checkbox"/> Residential <input type="checkbox"/> DOD <input type="checkbox"/> <input checked="" type="checkbox"/> Forest/Fields <input type="checkbox"/> DOE <input checked="" type="checkbox"/> Other <u>Wildlife Mgmt. Area</u> </p>	Site Setting: <p> <input type="checkbox"/> Urban <input type="checkbox"/> Suburban <input checked="" type="checkbox"/> Rural </p>	Years of Operation: <p> Beginning Year <u>1940</u> Ending Year <u>Active</u> <input type="checkbox"/> Unknown </p>
Type of Site Operations (check all that apply): <p> <input type="checkbox"/> Manufacturing (must check subcategory) <p> <input type="checkbox"/> Lumber and Wood Products <input type="checkbox"/> Inorganic Chemicals <input type="checkbox"/> Plastic and/or Rubber Products <input type="checkbox"/> Paints, Varnishes <input type="checkbox"/> Industrial Organic Chemicals <input type="checkbox"/> Agricultural Chemicals (e.g., pesticides, fertilizers) <input type="checkbox"/> Miscellaneous Chemical Products (e.g., adhesives, explosives, ink) <input type="checkbox"/> Primary Metals <input type="checkbox"/> Metal Coating, Plating, Engraving <input type="checkbox"/> Metal Forging, Stamping <input type="checkbox"/> Fabricated Structural Metal Products <input type="checkbox"/> Electronic Equipment <input type="checkbox"/> Other Manufacturing </p> <input type="checkbox"/> Mining <p> <input type="checkbox"/> Metals <input type="checkbox"/> Coal <input type="checkbox"/> Oil and Gas <input type="checkbox"/> Non-metallic Minerals </p> </p>	<p> <input type="checkbox"/> Retail <input type="checkbox"/> Recycling <input type="checkbox"/> Junk/Salvage Yard <input type="checkbox"/> Municipal Landfill <input checked="" type="checkbox"/> Other Landfill - Sanitary <input checked="" type="checkbox"/> DOD <input type="checkbox"/> DOE <input type="checkbox"/> DOI <input type="checkbox"/> Other Federal Facility <input checked="" type="checkbox"/> RCRA <p> <input type="checkbox"/> Treatment, Storage, or Disposal <input checked="" type="checkbox"/> Large Quantity Generator <input type="checkbox"/> Small Quantity Generator <input checked="" type="checkbox"/> Subtitle D <p> <input type="checkbox"/> Municipal <input type="checkbox"/> Industrial </p> <input type="checkbox"/> "Converter" <input type="checkbox"/> "Protective Filer" <input type="checkbox"/> "Non- or Late Filer" <input type="checkbox"/> Not Specified <input checked="" type="checkbox"/> Other <u>Vehicle Maintenance</u> </p> </p>	<p> Waste Generated: <input checked="" type="checkbox"/> Onsite <input type="checkbox"/> Offsite <input type="checkbox"/> Onsite and Offsite </p> <p> Waste Deposition Authorized By: <input checked="" type="checkbox"/> Present owner <input type="checkbox"/> Former Owner <input type="checkbox"/> Present & Former Owner <input type="checkbox"/> Unauthorized <input type="checkbox"/> Unknown </p> <p> Waste Accessible to the Public: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No </p> <p> Distance to Nearest Dwelling, School, or Workplace: <u>800</u> Feet (Also: Dwellings onsite) </p>

6. Waste Characteristics Information

Source Type: (check all that apply)	Source Waste Quantity: (include units)	Tier*:	General Types of Waste (check all that apply)
<input checked="" type="checkbox"/> Landfill <input type="checkbox"/> Surface Impoundment <input checked="" type="checkbox"/> Drums <input checked="" type="checkbox"/> Tanks and Non-Drum Containers <input type="checkbox"/> Chemical Waste Pile <input checked="" type="checkbox"/> Scrap Metal or Junk Pile <input type="checkbox"/> Tailings Pile <input type="checkbox"/> Trash Pile (open dump) <input type="checkbox"/> Land Treatment <input type="checkbox"/> Contaminated Ground Water Plume (unidentified source) <input type="checkbox"/> Contaminated Surface Water/Sediment (unidentified source) <input type="checkbox"/> Contaminated Soil <input checked="" type="checkbox"/> Other <u>UST Leak</u> <input type="checkbox"/> No Sources	<u>116 Acres</u> <u>495 gal</u> <u>25,000 gal</u> <u>0.25 acres</u> <u>50,000 gal</u>	<u>A</u> <u>V</u> <u>V</u> <u>A</u> <u>V</u> <u>V</u> <u>V</u> <u>V</u> <u>V</u> <u>V</u>	<input checked="" type="checkbox"/> Metals <input type="checkbox"/> Organics <input type="checkbox"/> Inorganics <input type="checkbox"/> Solvents <input type="checkbox"/> Paints/Pigments <input type="checkbox"/> Laboratory/Hospital Waste <input checked="" type="checkbox"/> Radioactive Waste <input checked="" type="checkbox"/> Construction/Demolition Waste <input checked="" type="checkbox"/> Pesticides/Herbicides <input type="checkbox"/> Acids/Bases <input checked="" type="checkbox"/> Oily Waste <input checked="" type="checkbox"/> Municipal Waste <input type="checkbox"/> Mining Waste <input checked="" type="checkbox"/> Explosives <input type="checkbox"/> Other _____
Physical State of Waste as Deposited (check all that apply):			
<input checked="" type="checkbox"/> Solid <input checked="" type="checkbox"/> Sludge <input type="checkbox"/> Powder <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Gas			

*C = Constituent, W = Wastestream, V = Volume, A = Area

EPA Potential Hazardous Waste Site
Preliminary Assessment Form - Page 3 of 4

CERCLIS Number: CA6211820760

7. Ground Water Pathway

Is Ground Water Used for Drinking Water Within 4 Mile: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is There a Suspected Release to Ground Water: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile 388 >1/4 - 1/2 Mile 131 >1/2 - 1 Mile 242 >1 - 2 Miles 3,073 >2 - 3 Miles 4,296 >3 - 4 Miles 7,00 Total Within 4 Miles 8,830
Type of Drinking Water Wells Within 4 Miles (check all that apply): <input checked="" type="checkbox"/> Municipal <input checked="" type="checkbox"/> Private <input type="checkbox"/> None	Have Primary Target Drinking Water Wells Been Identified: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Enter Primary Target Population: _____ People	
Depth to Shallowest Aquifer: 56 Feet	Nearest Designated Wellhead Protection Area: <input type="checkbox"/> Underlies Site <input type="checkbox"/> >0-4 Miles <input checked="" type="checkbox"/> None Within 4 Miles	
Karst Terrain/Aquifer Present: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): <input checked="" type="checkbox"/> Stream <input checked="" type="checkbox"/> River <input type="checkbox"/> Pond <input type="checkbox"/> Lake <input type="checkbox"/> Bay <input type="checkbox"/> Ocean <input type="checkbox"/> Other _____	Shortest Overland Distance From Any Source to Surface Water: 180 Feet _____ Miles
Is There a Suspected Release to Surface Water: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Site is Located in: <input checked="" type="checkbox"/> Annual - 10 yr Floodplain <input type="checkbox"/> >10 yr - 100 yr Floodplain <input type="checkbox"/> >100 yr - 500 yr Floodplain <input type="checkbox"/> >500 yr Floodplain
Drinking Water Intakes Located Along the Surface Water Migration Path: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	List All Secondary Target Drinking Water Intakes: Name Water Body Flow(efs) Population Served None _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____
Have Primary Target Drinking Water Intakes Been Identified: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Total within 15 Miles _____
If Yes, Enter Population Served by Primary Target Intakes: 0 People	
Fisheries Located Along the Surface Water Migration Path: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	List All Secondary Target Fisheries: Water Body/Fishery Name Flow (cfs) Nacimiento River/bass, catfish, rainbow trout 271 _____ _____ _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

EPA Potential Hazardous Waste Site
Preliminary Assessment Form - Page 4 of 4

CERCLIS Number: CA6211820760

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

- Yes
 No

Have Primary Target Wetlands Been Identified:

- Yes
 No

List Secondary Target Wetlands:

Water Body	Flow (cfs)	Frontage Miles
Salinas River	363	23.8

Other Sensitive Environments Located Along the Surface Water Migration Path:

- Yes
 No

Have Primary Target Sensitive Environments Been Identified:

- Yes
 No

List Secondary Target Sensitive Environments:

Water Body	Flow (cfs)	Sensitive Environment Types
Salinas River	363	Heron Rookery Least Bell's Vireo
		Big Sandy Wildlife Management Area
		San Joaquin Kit Fox Habitat

9. Soil Exposure Pathway

Are People Occupying Residences or Attending School or Daycare on or Within 200 Feet of Areas of Known or Suspected Contamination:

- Yes
 No

If Yes, Enter Total Resident Population:

_____ People

Number of Workers Onsite:

- None
 1 - 100
 101 - 1,000
 > 1,000

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

- Yes
 No

If Yes, List Each Terrestrial Sensitive Environment:

San Joaquin Kit Fox Habitat
(federally endangered species)

10. Air Pathway

Is There a Suspected Release to Air:

- Yes
 No

Enter Total Population on or Within:

Onsite	345
0 - 1/4 Mile	43
>1/4 - 1/2 Mile	131
>1/2 - 1 Mile	242
>1 - 2 Miles	3,073
>2 - 3 Miles	4,296
>3 - 4 Miles	200
Total Within 4 Miles	8,830

Wetlands Located Within 4 Miles of the Site:

- Yes
 No

Other Sensitive Environments Located Within 4 Miles of the Site:

- Yes
 No

List All Sensitive Environments Within 1/2 Mile of the Site:

Distance	Sensitive Environment Type/Wetlands Area (acres)
Onsite	Rare Species Habitat - CA Natural Diversity Database/Wetlands = 914 acres
0 - 1/4 Mile	Big Sandy Wildlife Mgmt. Area/Wetlands = 118 acres
>1/4 - 1/2 Mile	Heron Rookery; Least Bell's Vireo Nesting/Wetlands = 100 acres

**LATITUD AND LONGITUDE CALCULATION
WORKSHEET #1
APPENDIX H**

LATITUDE AND LONGITUDE CALCULATION WORKSHEET #1
LI USING CUSTOM RULER OR COORDINATOR™

SITE NAME: Camo Roberts Entrance CERCLIS #: CA 6211820760

AKA: _____ SSID: _____

ADDRESS: _____

CITY: Monterey STATE: CA ZIP CODE: _____

SITE REFERENCE POINT: _____

USGS QUAD MAP NAME: San Miguel TOWNSHIP: _____ N/S RANGE: _____ E/W

SCALE: 1:24,000 MAP DATE: _____ SECTION: _____ 1/4 _____ 1/4 _____ 1/4

MAP DATUM: 1927 (1983) (CIRCLE ONE) MERIDIAN: _____

COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER OF 7.5' MAP (attach photocopy):

LONGITUDE: 120° 37' 30" LATITUDE: 35° 45' 00"

COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER OF 2.5' GRID CELL:

LONGITUDE: 120° 42' 30" LATITUDE: 35° 47' 30"

CALCULATIONS: LATITUDE (7.5' QUADRANGLE MAP)

A) ALIGN THE BOTTOM OF THE SCALE WITH BOTTOM OF GRID. ALIGN THE TOP OF THE SCALE WITH THE TOP OF GRID. POSITION EDGE OF RULER OVER SITE REFERENCE POINT WHILE KEEPING TOP AND BOTTOM ALIGNED.

B) READ TICS ON RULER AT 1- OR 0.5-SECOND INTERVALS (INTERPOLATE).

C) EXPRESS IN MINUTES AND SECONDS (1' = 60"): 2° 23.00"

D) ADD TO STARTING LATITUDE: 35° 47' 30.00" + 2° 23.00" =

SITE LATITUDE: 35° 47' 53.00"

CALCULATIONS: LONGITUDE (7.5' QUADRANGLE MAP)

A) ALIGN THE BOTTOM OF THE SCALE WITH RIGHT SIDE OF GRID. ALIGN THE TOP OF THE SCALE WITH THE LEFT SIDE OF GRID. POSITION EDGE OF RULER OVER SITE REFERENCE POINT WHILE KEEPING TOP AND BOTTOM ALIGNED.

B) READ TICS ON RULER AT 1- OR 0.5-SECOND INTERVALS. (INTERPOLATE)

C) EXPRESS IN MINUTES AND SECONDS (1' = 60"): 2° 10.00"

D) ADD TO STARTING LONGITUDE: 120° 42' 30.00" + 2° 10.00" =

SITE LONGITUDE: 120° 44' 40.00"

INVESTIGATOR: Andrew Reda DATE: 2/6/95

4-MILE RADIUS POPULATION WORKSHEET
APPENDIX I

CAMP ROBERTS

4-Mile Radius Population Worksheet

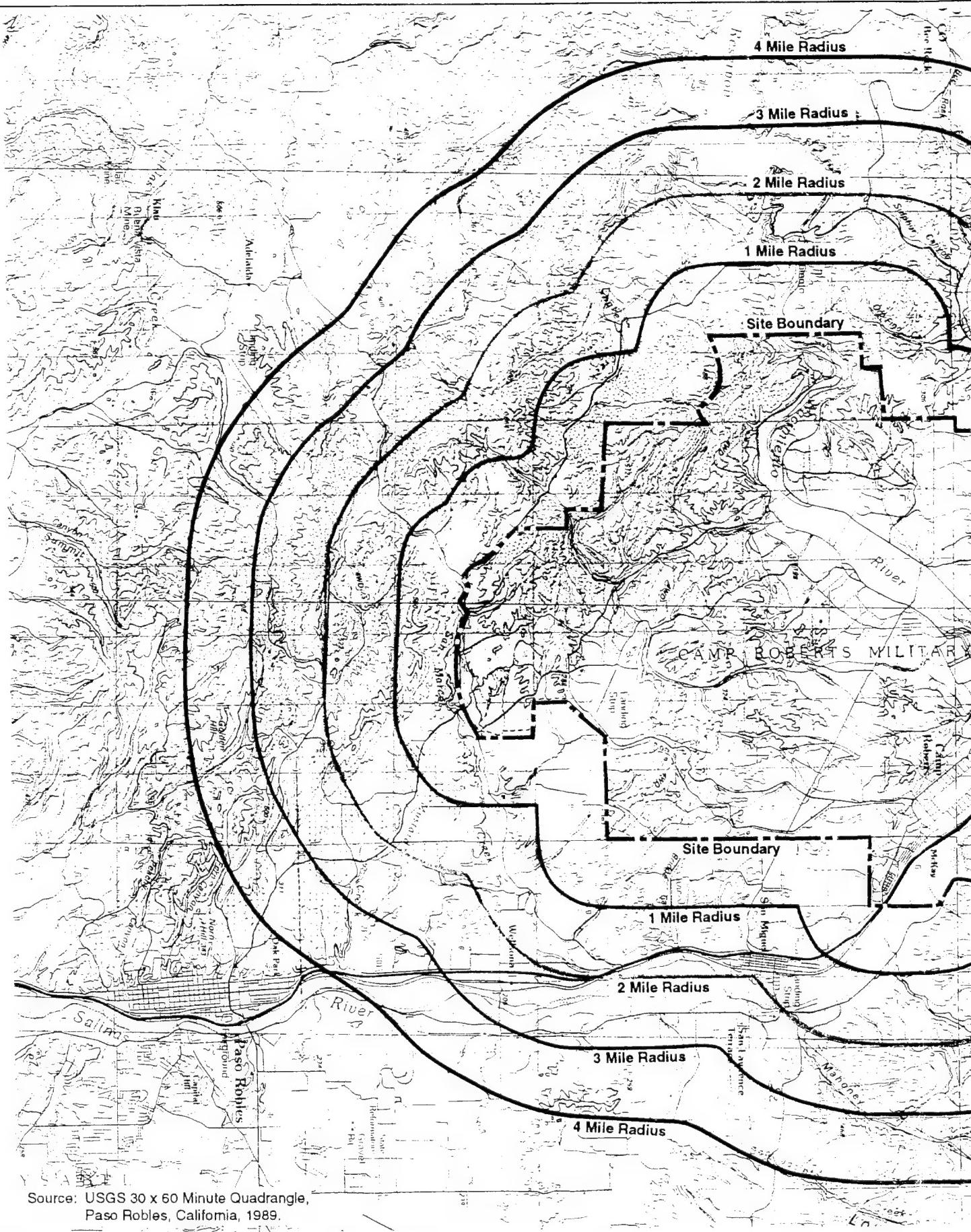
Total Population within a 4-mile radius of Camp Roberts was determined from data obtained from the Planning Departments in Monterey and San Luis Obispo Counties for average number of persons per household and total populations of San Miguel, Bradley, and Heritage Ranch. House counts were made from topographic maps. Onsite population data were obtained from the Camp Roberts Training Office.

<u>Distance Category</u>	<u>Residences</u>	<u>Population*</u>
Onsite	—	345
0 to $\frac{1}{4}$ mile	16	43
$\frac{1}{4}$ to $\frac{1}{2}$ mile	12	131 **
$\frac{1}{2}$ to 1 mile	66	242 **
1 to 2 miles	149	3,073 **
2 to 3 miles	300	4,296 **
3 to 4 miles	264	700
TOTAL = 8,830		

* 2.66 persons per household average for San Luis Obispo County, and 2.75 persons per household average for Monterey County

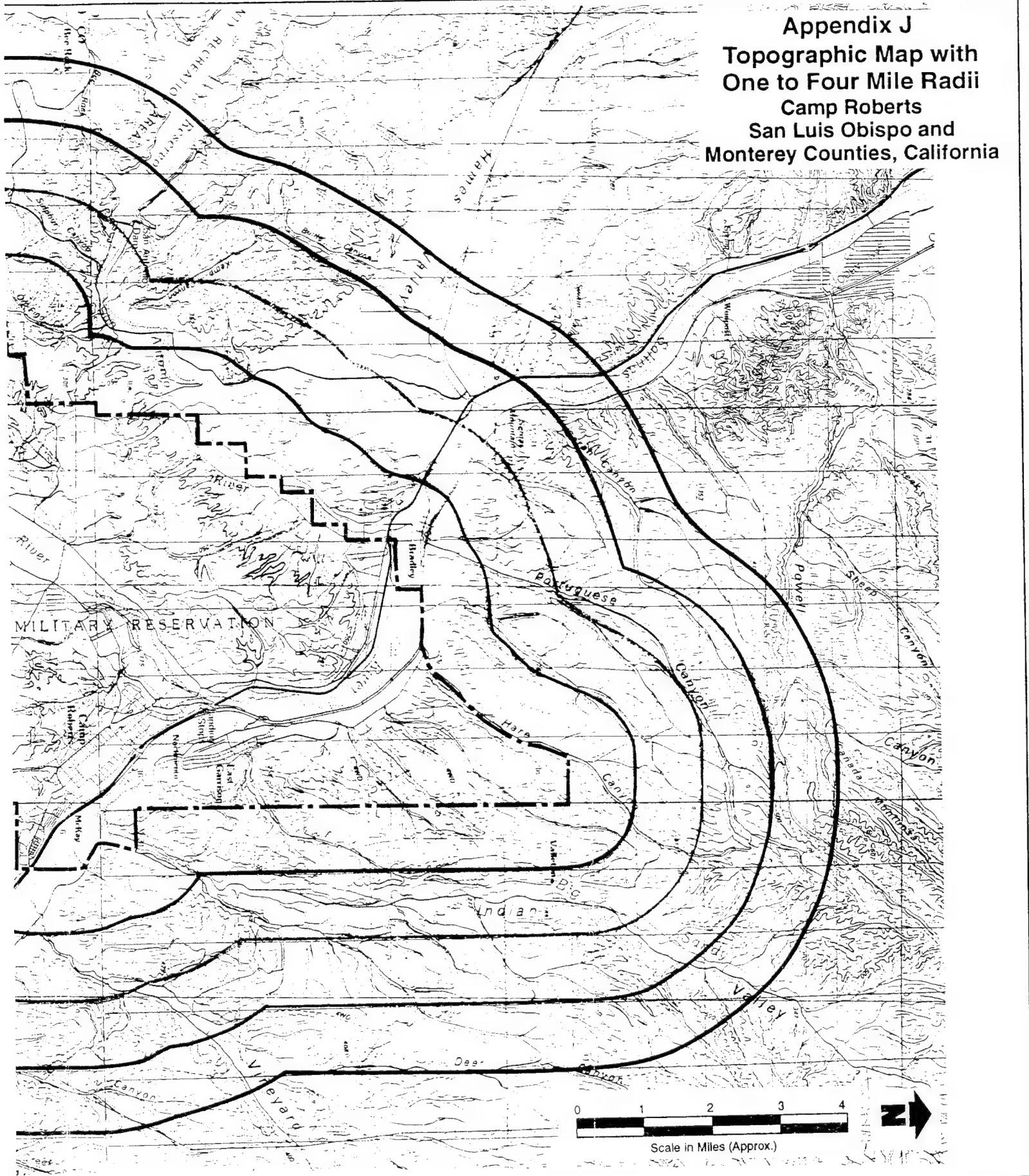
** Population derived from house count and known^{total} population of San Miguel, Bradley, and/or Heritage Ranch

**TOPOGRAPHIC MAP SHOWING 4-MILE RADIUS
FROM CAMP ROBERTS BOUNDARY**
APPENDIX J



Source: USGS 30 x 60 Minute Quadrangle,
Paso Robles, California, 1989.

Appendix J
Topographic Map with
One to Four Mile Radii
Camp Roberts
San Luis Obispo and
Monterey Counties, California



**RESULTS OF WASTEWATER TREATMENT PLANT
EFFLUENT SAMPLING
APPENDIX K**



5200 E. Hunter Street, Suite B Anaheim, California 92807 • 714-777-1425 • 1-800-3 CROSBY • FAX 714-777-3926

Analytical Report

ENVIRONMENTAL • CHEMICAL • MICROBIOLOGICAL • TESTING SERVICES

CLIENT: CAMP ROBERTS
ATTN.: MR. MARK FREDERICK

LAB RECEIVING #: 9406.129

Spl. Prep. Meth.: EPA 3010

MATRIX: LIQUID
UNIT: mg/lPrepared: 06/23/94
Analyzed: 06/28-07/01/94
Analyst: CM/RM**HEAVY METALS, TTLC**

	Lab ID:	MB062894	AA46945		Detection Limits
Client Sample ID:	Method	Blank	PLANT EFF.		
Arsenic	EPA 7061	ND	ND		0.01
Barium	EPA 6010	ND	ND		0.1
Cadmium	EPA 6010	ND	ND		0.005
Chromium Total	EPA 6010	ND	ND		0.06
Lead	EPA 6010	ND	ND		0.05
Mercury	EPA 7470	ND	ND		0.001
Selenium	EPA 7741	ND	ND		0.005
Silver	EPA 6010	ND	ND		0.01

QUALITY CONTROL DATA - HEAVY METALS, TTLC

MATRIX SPIKE/ DUPLICATE	ACCURACY							LOQ				
	SAMPLE CONC. (ppm)	SPIKE CONC. (ppm)	MS (ppm)	% MS	MSD (ppm)	% MSD	ACP % MS	RPD	ACP % RPD	LOQ CONC.	RESULT	% REC (90-110)
Arsenic	0.67	0.29	0.94	98	0.93	97	75-125	1.07	0-20	0.0020	0.0019	95
Barium	ND<0.1	0.5	0.42	84	0.39	76	75-125	7.40	0-20	0.106	0.108	97
Cadmium	ND<0.005	0.500	0.47	94	0.41	82	75-125	13.6	0-20	0.111	0.103	93
Chromium Total	ND<0.05	0.50	0.48	96	0.41	82	75-125	15.7	0-20	0.309	0.313	101
Lead	ND<0.05	0.50	0.45	90	0.41	82	75-125	9.30	0-20	0.478	0.478	100
Mercury	0.006	0.0100	0.0133	84	0.0131	82	75-125	3.01	0-20	0.0100	0.0095	95
Selenium	ND<0.005	0.025	0.023	92	0.026	104	75-125	12.2	0-20	0.0100	0.0103	103
Silver	ND<0.01	0.50	0.45	90	0.42	84	75-125	6.99	0-20	0.0379	0.0321	102

AUDIT DATA	LAB ID	SAMPLE ID	QC STD #	ANALYZED
	AA46945/	PLANT EFF/	ERA 9956 SPEX 6-75AS SPEX 6-157AS SPEX 129AS	06/28-07/01/94
	AA46113-14	MIX #1, MIX #2 COMPOSITE		

NOTES:

ND denotes Not Detected at the indicated detection limit.

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Analytical Report

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ENVIRONMENTAL • CHEMICAL • MICROBIOLOGICAL • TESTING SERVICES

CLIENT: CAMP ROBERTS
ATTN.: MR. MARK FREDERICK

LAB RECEIVING #: 9406.133

Pg. 2 of 2

Spl. Prep. Meth.: EPA 5030

MATRIX: LIQUID
UNIT: µg/lPrepared: 06/23/94
Analyzed: 06/23/94
Analyst: RRT

PURGEABLE ORGANIC COMPOUNDS, EPA-524.2

COMPOUNDS:	Lab ID: T23B2.D	AA45945	Detection Limits
	Client Sample ID: Method Blank	PLANT EFF.	
	D.F.: 1	1	
n-propylbenzene	ND	ND	0.5
2-chlorobutane	ND	ND	0.5
1,3,5-trimethylbenzene	ND	ND	0.5
4-chlorotoluene	ND	ND	0.5
tert-butylbenzene	ND	ND	0.5
1,2,4-trimethylbenzene	ND	ND	0.5
sec-butylbenzene	ND	ND	0.5
p-isopropyltoluene	ND	ND	0.5
1,3-dichlorobenzene	ND	ND	0.5
1,4-dichlorobenzene	ND	ND	0.5
n-butylbenzene	ND	ND	0.5
1,2-dichlorobenzene	ND	ND	0.5
1,2-dibromo-3-chloropropane	ND	ND	0.5
1,2,3-trichlorobenzene	ND	ND	0.5
hexachlorobutadiene	ND	ND	0.5
naphthalene	ND	ND	0.5
1,2,4-trichlorobenzene	ND	ND	0.5

SURROGATE SPIKE	% SURROGATE RECOVERY		Control Limits
4-bromofluorobenzene	108	85	80-120
1,2-dichlorobenzene-d4	113	84	80-120

QUALITY CONTROL DATA, EPA-524.2

MATRIX SPIKE/ MATRIX SPIKE DUPLICATE	ACCURACY					PRECISION		
	SPK CONC. (µg/l)	MS (µg/l)	MSD (µg/l)	% MS	% MSD	ACP % MS	RPD	ACP % RPD
1,1-dichloroethene	5	4	4	81	80	61-145	1	0-14
benzene	5	4	5	88	90	76-127	2	0-11
trichloroethene	5	4	4	87	86	71-120	0	0-14
toluene	5	4	6	87	89	76-125	2	0-13
chlorobenzene	5	5	5	93	96	75-130	3	0-13

AUDIT DATA	LAB ID	SAMPLE ID	BATCH #	QC STD #	ANALYZED
	AA45945	PLANT EFF.	V2T2294	VOA 39	06/23/94

NOTES:

ND denotes Not Detected at the indicated detection limit.

This report is preceded by a cover sheet that contains vital information.

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ENVIRONMENTAL • CHEMICAL • MICROBIOLOGICAL • TESTING SERVICES

CLIENT: CAMP ROBERTS
ATTN.: MR. MARK FREDERICK

LAB RECEIVING#: 9406.129

Pg. 1 of 2

Spl. Prep. Meth: EPA 5030

MATRIX: LIQUID
UNIT: µg/lPrepared: 06/23/94
Analyzed: 06/23/94
Analyst: RRT**PURGEABLE ORGANIC COMPOUNDS, EPA-524.2**

COMPOUNDS:	Lab ID: T23B2.D Client Sample ID: Method Blank D.F.; 1	AA46945 PLANT EFF. 1	Detection Limits
dichlorodifluoromethane	ND	ND	0.5
chloromethane	ND	ND	0.5
v vinyl chloride	ND	ND	0.5
bromomethane	ND	ND	0.5
chloroethane	ND	ND	0.5
trichlorofluoromethane	ND	ND	0.5
1,1-dichloroethane	ND	ND	0.5
ethylene chloride	ND	ND	0.5
trans-1,2-dichloroethene	ND	ND	0.5
1,1-dichloroethane	ND	ND	0.5
2,2-dichloropropane	ND	ND	0.5
cis-1,2-dichloroethene	ND	ND	0.5
bromochloromethane	ND	ND	0.5
chloroform	ND	ND	0.5
1,1,1-trichloroethane	ND	ND	0.5
1,1-dichloropropene	ND	ND	0.5
1,2-dichloroethane	ND	ND	0.5
carbon tetrachloride	ND	ND	0.5
benzene	ND	ND	0.5
trichloroethene	ND	ND	0.5
1,2-dichloropropane	ND	ND	0.5
bromochloromethane	ND	ND	0.5
dibromomethane	ND	ND	0.5
trans-1,3-dichloropropene	ND	ND	0.5
1,1,2-trichloroethane	ND	ND	0.5
1,3-dichloropropane	ND	ND	0.5
1,2-dibromoethane	ND	ND	0.5
toluene	ND	ND	0.5
cis-1,3-dichloropropene	ND	ND	0.5
propanone	ND	ND	0.5
tetrachloroethene	ND	ND	0.5
chlorochloromethane	ND	ND	0.5
1,1,2-tetrachloroethane	ND	ND	0.5
chlorobenzene	ND	ND	0.5
ethylbenzene	ND	ND	0.5
p-xylene	ND	ND	0.5
styrene	ND	ND	0.5
oxytene	ND	ND	0.5
total xylenes	ND	ND	0.5
isopropylbenzene	ND	ND	0.5
1,1,2,2-tetrachloroethane	ND	ND	0.5
1,2,3-trichloropropane	ND	ND	0.5
bromobenzene	ND	ND	0.5

» Continued on next page...



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Analytical Report

ENVIRONMENTAL • CHEMICAL • MICROBIOLOGICAL • TESTING SERVICES

CLIENT: CAMP ROBERTS
ATTN.: MR. MARK FREDERICK

LAB RECEIVING#: 9405.019

MATRIX: LIQUID
UNIT: mg/lPrepared: 08/02/94
Analyzed: 08/02/94
Analyst: CM

Lab ID:	MB060294	AA45199	Detection Limit
Client Sample ID:	METHOD BLANK	PLANT EFF.	
Total Suspended Solids, STD/MET 20BC	ND	130	40

NOTES:*ND denotes not detected at the indicated detection limits.*

NRC CORRESPONDENCE
APPENDIX L

PATEC
file

MAR 24 1988

Department of the Army
Sacramento District Corps of Engineers
650 Capitol Mall
Sacramento, California 95814-4794

Attention: M. J. Garrett
Management and Disposal Branch

Gentlemen:

Subject: NRC Source Material License, SUB-1137 (expired)

In answer to your letter dated February 29, 1988, the following information is submitted:

- (a) Source Material License SUB-1137 (expired) was originally issued to Pacific Technica Corporation (PATEC) of Santa Barbara, California. There was a contractor working for PATEC under SUB-1137 by the name of Pacific Armatechnica Corporation also referred to as PATEC.
- (b) Source Material License SUB-1137 was permitted to expire by the Pacific Technica Corporation since NRC would not renew the license until a cleanup was made at Camp Roberts Range 5. The Licensee's contractor had fired depleted uranium (DU) projectiles on the unauthorized firing range. Pacific Technica Corporation never cleaned up the contaminated Range 5.
- (c) Bangor Punta Corporation of Stamford, Connecticut, purchased the Pacific Technica Corporation. As a part of the purchase, Bangor Punta Corporation assumed the responsibility for the cleanup of Range 5 and 12 at Camp Roberts.
- (d) Ranges 5 and 12 were decontaminated by Bangor Punta Corporation contractors.
- (e) An overcheck by NRC contractors indicated that the residual contamination was within NRC guidelines for release to unrestricted use.
- (f) Bangor Punta Corporation never had an NRC license. SUB-1137 was the only license issued in this matter.
- (g) Pacific Armatechnica Corporation of Santa Barbara, California, the contractor to PATEC, was given a general license to cover the depleted uranium (DU) projectiles still on Range 18 at Camp Roberts. The amount of DU present is less than fifteen pounds and can be possessed under the general license provisions of 10 CFR 40.22(a). These materials could not be cleaned up due to the live ordnance (duds) on Range 18.

M. Garrett

2

FAX 7-4 1992

A copy of the PATEC license SUB-1137 (expired) is enclosed for your records.
If you need additional information, do not hesitate to call me at 415-943-3763.

Sincerely,

original signed by

R. D. Thomas, Chief
Nuclear Materials Safety Section

Enclosure: As Stated

REQUEST COPY <input checked="" type="checkbox"/> YES / <input type="checkbox"/> NO	REQUEST COPY <input type="checkbox"/> YES / <input checked="" type="checkbox"/> NO	REQUEST COPY <input type="checkbox"/> YES / <input checked="" type="checkbox"/> NO	REQUEST COPY <input type="checkbox"/> YES / <input checked="" type="checkbox"/> NO	REQUEST COPY <input type="checkbox"/> YES / <input checked="" type="checkbox"/> NO	SENDING TO PDR <input type="checkbox"/> YES / <input checked="" type="checkbox"/> NO
---	---	---	---	---	---

RV *RDM*
RThomas/cb
3/23/88

Item AEC-410
(1-6)UNITED STATES
ATOMIC ENERGY COMMISSION

SOURCE MATERIAL LICENSE

Pursuant to the Atomic Energy Act of 1954, and Title 10, Code of Federal Regulations, Chapter 1, Part 40, "Licensing of Source Material," and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, possess and import the source material designated below; to use such material for the purpose(s) and at the place(s) designated below; and to deliver or transfer such material to persons authorized to receive it in accordance with the regulations in said Part. This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954 and is subject to all applicable rules, regulations, and orders of the Atomic Energy Commission, now or hereafter in effect, including Title 10, Code of Federal Regulations, Chapter 1, Part 20, "Standards for Protection Against Radiation," and to any conditions specified below.

Licensee		3. License No.
1. Name Pacific Technica Corporation		SUB-1137
2. Address 415 East Montecito Street Santa Barbara, California 93101 <i>805/964-1671</i>		4. Expiration Date
		August 31, 1977
6. Source Material		5. Docket No.
Uranium		40-8137
7. Maximum quantity of source material which licensee may possess at any one time under this license		50 kilograms

CONDITIONS

8. Authorized use (Unless otherwise specified, the authorized place of use is the licensee's address stated in Item 2 above.)

Depleted uranium contained in projectiles for ballistic testing in accordance with the statements, representations and conditions specified in the licensee's application dated June 21, 1972.

9. Authorized place of use: Ranges 12 and 18, Camp Roberts, California



For the U. S. ATOMIC ENERGY COMMISSION

Date of issuance AUG 8 1972

Original Signed by
Robert L. Layfield* U. S. GOVERNMENT PRINTING OFFICE: 1962 O-4120 Materials Branch
Directorate of Licensing

COPY



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
650 CAPITOL MALL
SACRAMENTO, CALIFORNIA 95814-4794

February 29, 1988

RECEIVED
NRC
REGION V

Management & Disposal Branch

1008 MAR -2 P 12:29

SUBJECT: Camp Roberts, California; NRC License

Mr. R. D. Thomas
Chief, Nuclear Materials Safety Section
Nuclear Regulatory Commission
Region V
1450 Maria Lane, Suite 210
Walnut Creek, California 94596

Dear Mr. Thomas:

We are in receipt of a copy of your letter dated July 31, 1986, to the Bangor Punta Corporation of Stamford, Connecticut, regarding expired Source Material License SUB-1137 (copy attached). In that letter, it was learned that a similar license was granted to the Pacific Armatechnica Corporation (Patec) of Santa Barbara, California.

This office is charged with real estate responsibility and administration for Camp Roberts, California, and it is requested that a copy of the Patec license be furnished for record purposes. Please contact Mr. M. J. Garrett at the letterhead address or at (916) 551-1785, should you require further information.

Your cooperation will be appreciated.

Sincerely,

Nicole M. Gauthier
Nicole M. Gauthier
Chief, Management & Disposal Branch
Real Estate Division

Enclosure

JUN-29-95 THU 13:41

MB-WOFO

FAX NO. 5109750381

P.06



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION V

1450 MARIA LANE, SUITE 210
WALNUT CREEK, CALIFORNIA 94596

JUL 31 1986

Bangor Punta Corporation
One Circle West
P. O. Box 10377
Stamford, Connecticut 06904-2377

Attention: Dudley C. Phillips
Senior Vice President and
General Counsel

Gentlemen:

Subject: Source Material License
SUB-1137 (Expired)

On May 15 and 16, 1986, an Oak Ridge Associated Universities survey team (NRC Contractor) performed a confirmatory survey of Ranges 5 and 12 at Camp Roberts, California. The results of this survey support the close-out surveys performed by the licensee's contractors, and confirm that the radiological conditions satisfy the NRC guidelines established for release for unrestricted use. A copy of that report is enclosed for your information.

Therefore, the areas associated with Ranges 5 and 12 are released for unrestricted use. Since we have no further questions in this matter, Source Material License SUB-1137 (Expired) is hereby retired.

Pursuant to a letter dated January 16, 1986, to Pacific Armatechnica Corporation, Santa Barbara, California, a general license authorized by 10 CFR 40.22(a) was granted for the source materials still remaining on Range 18 at Camp Roberts, California.

If you have any further questions in this matter, I will be glad to discuss them with you.

Sincerely,

A handwritten signature in black ink, appearing to read "R. D. Thomas".

R. D. Thomas, Chief
Nuclear Materials Safety Section

JAN 16 1986

Pacific Armatechnica Corporation
816 State Street
Suite A
Santa Barbara, California 93101

Attention: Dr. Fritz K. Feldmann
President

Subject: Decontamination of Ranges 5, 12, and 18 at Camp Roberts,
California

A recent communication from Mr. Bob Clark, Allied Nuclear Company, indicated that the U. S. Army had removed the APC's from Ranges 5 and 12. Mr. Clark also stated that both areas where the APC's were located are contaminated with uranium oxides or metal fragments.

In the best interest of all parties concerned, it is requested that you make the arrangements for final clean-up of Ranges 5 and 12 within twenty (20) days of the date of this letter. For planning purposes, a copy of your work (clean-up) schedule would be appreciated.

The release of Ranges 5 and 12 for unrestricted use is dependent upon the results of the final radiological surveys. PATEC's final survey report must be submitted to this office for evaluation prior to the confirmatory release survey which will be conducted by an NRC contractor.

Your letter dated November 22, 1985 indicated that only 10.86 pounds of depleted uranium had been deposited on Range 18. Since this quantity of source material is less than the limitation (fifteen pounds) specified in 10 CFR 40.22(a), we are going to consider the source material (depleted uranium projectiles) presently on Range 18 to be possessed under a general license. Therefore, Range 18 will not require any decontamination if the limitation of 10 CFR 40.22(a) is not exceeded in any future firings of depleted uranium materials that may be authorized by an NRC specific license issued by this office.

If you have any questions, we will be glad to discuss them with you.

Sincerely,

151

R. D. Thomas, Chief
Nuclear Materials Safety Section

OFFICE	RV	RV						
NAME	Thomas/cb	MANAGER						
DATE	11/15/86	1/16/86						



November 22, 1985

USNRC
1450 Maria Lane
Suite 120
Walnut Creek, Ca. 94596

ATTN: Mr. Bob Thomas
Enforcement Office

RE: Camp Roberts Range 18
License SUB 1137

Gentlemen:

This is to certify that this company deposited 70 rounds of ammunition containing DU penetrators weighing 70.5 grams each into the soil of Range 18. The total depleted uranium fired on Range 18 is 4.935 kg (10.86 lbs.).

This information is from Patec firing records as well as my personal recollection.

Sincerely,

A handwritten signature in black ink, appearing to read "Dr. Fritz K. Feldmann".

Dr. Fritz K. Feldmann
President

FFK/ktc

Uranium contained in counterweights installed in aircraft, rockets, missiles, and missiles, or stored or used in connection with installation or removal of such counterweights: Provided, That: The counterweights are manufactured in accordance with a specific license issued by the Commission or the Atomic Energy Commission authorizing distribution by the licensee pursuant to this paragraph:

Each counterweight has been inscribed with the following legend legible through any plating or covering: "Depleted Uranium";

Each counterweight is durably legibly labeled or marked with the identification of the manufacturer, the statement: "Unauthorized Allocations Prohibited"; and

The exemption contained in this paragraph shall not be deemed to authorize the chemical, physical, or metallurgical treatment or processing of such counterweights other than repair or restoration of any plating or covering.

Natural or depleted uranium is used as shielding constituting part of any shipping container: Provided, That:

The shipping container is durably and legibly impressed with the legend "CAUTION—RADIOACTIVE SHIELDING—URANIUM"; and

The uranium metal is encased in steel or equally fire resistant metal of minimum wall thickness of one-eighth inch (3.2 mm).

Thorium contained in finished optical lenses, provided that each lens does not contain more than 30 percent weight of thorium; and that the exemption contained in this subparagraph shall not be deemed to authorize either:

The shaping, grinding or polishing of such lens or manufacturing processes other than the assembly of such lens into optical systems and devices without any alteration of the lens; or

The receipt, possession, use, transfer, or of thorium contained in intact lenses, or in spectacles, or in pieces in binoculars or other optical instruments.

The requirements specified in paragraphs (c)(5) (II) and (III) of this section, if not met by counterweights manufactured prior to Dec. 31, 1968: Provided, that such counterweights were manufactured under a specific license issued by the Atomic Energy Commission and were inscribed with the legend required by 10.13(c)(5)(I) in effect on June 30, 1989.

(8) Thorium contained in any finished aircraft engine part containing nickel-thoria alloy, *Provided, That:*

(I) The thorium is dispersed in the nickel-thoria alloy in the form of finely divided thoria (thorium dioxide); and

(II) The thorium content in the nickel-thoria alloy does not exceed 4 percent by weight.

(9) The exemptions in this paragraph (c) do not authorize the manufacture of any of the products described.

(d) Any person is exempt from the regulations in this part and from the requirements for a license set forth in section 62 of the Act to the extent that such person receives, possesses, uses, or transfers uranium contained in detector heads for use in fire detection units, provided that each detector head contains not more than 0.005 microcurie of uranium. The exemption in this paragraph does not authorize the manufacture of any detector head containing uranium.

§ 40.14 Specific exemptions.

(a) The Commission may, upon application of any interested person or upon its own initiative, grant such exemptions from the requirements of the regulation in this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.

(b) [Reserved] 34 FR 19546

(c) The DOE is exempt from the requirements of this part to the extent that its activities are subject to the requirements of Part 60 of this chapter.

(d) Except as specifically provided in Part 61 of this chapter any licensee is exempt from the requirements of this part to the extent that its activities are subject to the requirements of Part 61 of this chapter.

GENERAL LICENSES

§ 40.20 Types of license.

(a) Licenses for source material and byproduct material are of two types: general and specific. Licenses for long-term care and custody of residual radioactive material at disposal sites are general licenses. The general licenses provided in this part are effective without the filing of applications with the Commission or the issuance of licensing documents to particular persons. Specific licenses are issued to named persons upon applications filed pursuant to the regulations in this part.

(b) Section 40.27 contains a general license applicable for custody and long-term care of residual radioactive

material at uranium mill tailings disposal sites remediated under Title I of the Uranium Mill Tailings Radiation Control Act of 1978, as amended.

(c) Section 40.28 contains a general license applicable for custody and long-term care of byproduct material at uranium or thorium mill tailings disposal sites under Title II of the Uranium Mill Tailings Radiation Control Act of 1978, as amended.

§ 40.21 General license to receive title to source or byproduct material.

A general license is hereby issued authorizing the receipt of title to source or byproduct material, as defined in this part, without regard to quantity. This general license does not authorize any person to receive, possess, deliver, use, or transfer source or byproduct material.

§ 40.22 Small quantities of source material.

(a) A general license is hereby issued authorizing commercial and industrial firms, research, educational and medical institutions and Federal, State and local government agencies to use and transfer not more than fifteen (15) pounds of source material at any one time for research, development, educational, commercial or operational purposes. A person authorized to use or transfer source material, pursuant to this general license, may not receive more than a total of 150 pounds of source material in any one calendar year.

(b) Persons who receive, possess, use, or transfer source material pursuant to the general license issued in paragraph (a) of this section are exempt from the provisions of Parts 19, 20, and 21, of this chapter to the extent that such receipt, possession, use or transfer are within the terms of such general license: *Provided, however, That this exemption shall not be deemed to apply to any such person who is also in possession of source material under a specific license issued pursuant to this part.*

(c) Persons who receive, possess, use or transfer source material pursuant to the general license in paragraph (a) of this section are prohibited from administering source material, or the radiation therefrom, either externally or internally, to human beings except as may be authorized by NRC in a specific license.

§ 40.23 General license for carriers of transient shipments of natural uranium other than in the form of ore or ore residue.

(a) A general license is hereby issued to any person to possess a transient shipment of natural uranium, other than in the form of ore or ore residue, in amounts exceeding 500 kilograms.